

Veterinary Anatomic Pathology Residency Training Program

Mission

To provide advanced training leading to proficiency in the practice of veterinary anatomic pathology and to board certification by the American College of Veterinary Pathologists (ACVP). To promote a life-long pursuit of knowledge and understanding in the dynamic field of veterinary pathology through its practice and through the pursuit of advanced graduate degree training.

Overview

The Anatomic Pathology Residency Program at North Carolina State University (NCSU) provides training of residents through three program areas: 1) NCSU training positions, 2) [NCI Molecular Pathology Graduate Fellowship \(MPGF\)](#) positions and 3) NCSU / Partnership positions. These positions are funded by external institutions and agencies in partnership with the College of Veterinary Medicine and the anatomic pathology residency training program.

NCSU Training positions provide for 3-years of residency training and provide advanced training in anatomical pathology and a foundation to become a competent pathologist. This program prepares residents for diverse career opportunities including but not limited to academic, industry, government and diagnostic pathology positions. Applicants with an interest in an academic pathology career are encouraged. Training emphasizes preparation for certification by the American College of Veterinary Pathologists and the pursuit of advanced degrees. Residents have the opportunity to enroll as graduate students and receive a non-thesis Masters of Specialized Veterinary Medicine (MSpVM) during their training and are strongly encouraged to enter a Ph.D. graduate research degree program upon completion of their residency. Continued participation in pathology training after entrance into graduate school is encouraged and supported in preparation for the board certification exam.

Currently Enrolled:	5
Board certification exam pass rate:	100% in the last 10 years
Average attempts to pass:	1.05

- Higher degree status for current residents
 - 4/5 of current residents have or are actively pursuing higher education degrees
- Higher degrees and degrees in progress for residents completing in the last 5 years
 - 6/8 residents completed in the last 5 years have a higher degree or are actively pursuing a degree
- Higher degrees and degrees in progress for residents completing in the last 5 to 10 years
 - 11/13 residents were started in additional graduate degrees or had a degree prior to completing the residency

NCI Molecular Pathology Graduate Fellowship (MPGF) positions provide combined anatomic pathology residency and Ph.D. training through the NIH. Residents receive 2-years of solid residency training at NCSU in anatomic pathology before transitioning to the NIH campus to pursue and Ph.D. degree, a world-leading center for advanced medical research. Training also emphasizes preparation for certification by the American College of Veterinary Pathologists.

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NCSU / Partnership positions provide for 3-years of residency training at NCSU similar to our NCSU training positions but with a focus on specific pathology career goals developed with partner institutions. Career opportunities are varied and include diagnostic, industry and government and academic. Antech Diagnostics Inc. sponsors diagnostic career focused positions. Emphasis is on preparation for certification by the American College of Veterinary Pathologists.

Residency Stipends and Benefits

Stipend levels depend on the program sponsor. Stipends begin at \$30,000 with benefits for NCSU training positions and for NCSU / External Institution Partnership positions and cover 3-years of training. Candidates enrolled in the [NCI Molecular Pathology Graduate Fellowship \(MPGF\)](#) receive 2-years of residency funding and benefits dependent on NIH funding levels and receive subsequent support for Ph.D. training.

Residency Program

Anatomic pathology residents are trained in the morphologic pathology of food, companion, laboratory, aquatic, equine, avian and exotic animals. Resident's major activities include performing necropsies and examining surgical pathology specimens, under the supervision of a senior pathologist. Integration of pathologic findings with patient history, clinical findings, clinical pathology data, microbiology, immunology, toxicology, and other ancillary studies is emphasized. Molecular and general pathology principles are emphasized. Residents will participate in necropsy and histopathology rounds as an important component of program. Residents will be exposed to related disciplines by selecting specialized rotations in disciplines such as poultry pathology, electron microscopy, toxicological pathology, clinical pathology, or research. Residents may elect rotations or short externships at the North Carolina Animal Disease Diagnostic Laboratory, National Institute of Environmental Health Sciences, the University of North Carolina School of Medicine, Duke University School of Medicine or at one of the variety of government and private research institutions in the Research Triangle area. Residents attend seminars, conferences, and rounds in the College, University, and other institutions in the surrounding area.

Mentorship

Anatomic pathology residents will be assigned a three-member residency advisory committee composed of 2 pathologists and 1 one non-program faculty member, selected to meet the academic interests of the resident. Residents meet with their committee atleast biannually for career and residency guidance. Residents are evaluated two times each year, by Dec 1 and Apr 1. There is a standard evaluation form. A copy of the form is submitted to the associate Dean for Services and one is placed in the trainees file.

Graduate Training

Diverse opportunities are available to residents choosing to pursue graduate training. Residents planning a Ph.D. degree will be encouraged to identify mentors and to seek graduate stipend support during the residency period. Graduate studies at North Carolina State University may be pursued in one of a variety of areas including toxicology, carcinogenesis, oncology, infectious diseases, immunology, cell biology, pathology, physiology and microbiology. In addition to NC State University, research training opportunities are available at several institutions in the Research Triangle Park, including the National Institutes of Environmental Health Sciences, as well as the University of North Carolina School of Medicine and Duke University School of Medicine. Graduate programs are organized through NC State University and the research can

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be done in laboratories at the various institutions. When selecting candidates for open residency positions, preference will be given to individuals wishing to pursue graduate studies leading to the Ph.D. degree.

Requirements for Application

Applicants must possess a DVM or equivalent AVMA-recognized degree. Applicants must submit 1) Letter of intent stating career goals, 2) Curriculum vitae, 3) Veterinary school transcripts including GPA, and 4) Three letters of reference. In addition, foreign graduates of countries where English is not the official native language should include official transcripts of TOEFL scores. In addition to submitted application material above, NC State University training positions and NC State University / Partnership training positions must fill in application material on-line through human resources at NC State University and an active web-link will be present [LINK HERE](#) when a position is open. All open program positions are dependant on available funding, which fluctuates from year to year.

Applicants should apply to a specific position announcement, follow specific program position announcement deadlines for application and send original documents. Open position announcements can be found at the following [this LINK HERE](#). Application deadlines vary by program position announcement. [NCI Molecular Pathology Graduate Fellowship \(MPGF\)](#) program applicants should dual submit their application material to the NCI/NIH and to NC State University. Fellowship applicants must apply to the NC State University CBS graduate degree program through the Graduate School ([LINK HERE](#)). To be admitted to the fellowship program, students must be accepted by both the NIH and the NC State University residency program.

Candidate Selection

The residency program director will coordinate the selection process and will review candidate material with anatomic pathology faculty. The closing date for NCSU training positions and NCSU / Partnership positions is November 15 of the year preceding an open July 1 position. Occasionally positions become available at alternate times depending on funding availability. The residency program director will meet with faculty to review application packets by December 1. [NCI Molecular Pathology Graduate Fellowship \(MPGF\)](#) program applicants should follow application deadlines provided at the NCI. Interviews will generally occur by phone conferencing. Candidates are encouraged to visit the program in person at their own expense in the 9-months preceding an application deadline.

Please Send Questions By Email To:

Keith E. Linder DVM, PhD, ACVP
Director of Anatomic Pathology Residency Training
Keith_Linder@ncsu.edu

Please Submit Residency Application Materials To:

Keith E. Linder DVM, PhD, ACVP
Department of Pathobiology
College of Veterinary Medicine
North Carolina State University
4700 Hillsborough Road
Raleigh, North Carolina 27606

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Anatomic and Clinical Pathology Faculty

- Luke Borst, D.V.M, Ph.D., Diplomate A.C.V.P. (veterinary anatomic pathology), Assistant Professor. Infectious disease
- John M. Cullen, V.M.D., Ph.D., Diplomate A.C.V.P. (veterinary anatomic pathology), Professor. Liver disease, carcinogenesis.
- Gregory Dean, D.V.M., Ph.D., Diplomate A.C.V.P. (veterinary clinical pathology), Professor. Pathogenesis of lentivirus infections.
- Carol B. Grindem, D.V.M., Ph.D., Diplomate A.C.V.P. (veterinary clinical pathology), Professor. Neoplasms of the hematopoietic system.
- Yongbaek Kim, D.V.M., Ph.D., Diplomate A.C.V.P., (veterinary anatomic pathology), Assistant Professor. Toxicologic pathology and carcinogenesis.
- Keith Linder, D.V.M., Ph.D., Diplomate A.C.V.P., (veterinary anatomic pathology), Assistant Clinical Professor. Dermatopathology and Skin Disease Pathogenesis.
- Jerry McHugh Law, D.V.M., Ph.D., Diplomate A.C.V.P., (veterinary anatomic pathology), Professor. Aquatic Toxicologic Pathology.
- Donald J. Meuten, D.V.M., Ph.D., Diplomate A.C.V.P. (veterinary anatomic pathology and clinical pathology), Professor. Bone and calcium disorders.
- Jennifer Neal, D.V.M., Diplomate A.C.V.P, Assistant Clinical Professor (veterinary clinical pathology).

Associated & Adjunct Faculty

- H. John Barnes, D.V.M., Ph.D., Diplomate A.C.V.P. (veterinary anatomic pathology), Avian Pathology.
- Michael Dykstra, Ph.D. Electron microscopy; Mycology.
- Jeff Everitt, D.V.M., Diplomate A.C.V.P., (veterinary anatomic pathology). Toxicological Pathology.
- Jerry Hardisty, D.V.M., Diplomate A.C.V.P., (veterinary anatomic pathology). Toxicological Pathology.
- David Malarkey, D.V.M., Ph.D., Diplomate A.C.V.P., (veterinary anatomic pathology).
- Richard Miller, D.V.M., Ph.D., Diplomate A.C.V.P., (veterinary anatomic pathology), Toxicologic Pathology. Hepatic carcinogenesis.
- Peter Moisan, D.V.M., Diplomate A.C.V.P., (veterinary anatomic pathology). Large animal pathology.
- Edward J. Noga, D.V.M., M.S., Diseases of the fish.
- Pam Luther, D.V.M., Diplomate A.C.V.P., (veterinary anatomic pathology). Dermatopathology.
- Mike Davidson, D.V.M., Diplomate A.C.V.O., Ophthalmology
- Thierry Olivry, D.V.M., Ph.D., Diplomate A.C.V.I.M., Dermatopathology.
- Linda Koistra, D.V.M., Ph.D., Diplomate A.C.V.P., (veterinary anatomic pathology). Industry and Diagnostic Pathology.