Residency Program in Veterinary Pathology at the University of Veterinary Medicine Hannover

Aim of the program:

The objectives of the pathology residency program and combined research/residency program at the Department of Pathology of the University of Veterinary Medicine Hannover is to provide trainees with experience in necropsy and surgical pathology in a three year period. The training for anatomic pathology residents is designed to provide experience in modern laboratory techniques for the investigation of the pathogenesis of animal diseases and animal models for human diseases. In an intensive training program the resident will be prepared for the board examination of the “European College of Veterinary Pathologists” (ECVP). After successful completion of the combined research/residency program and board examination the candidate will acquire the diplomate status of the ECVP and the academic title “doctor medicinae veterinariae (Dr. med. vet.) or “Doctor of Philosophy” (Ph.D).

Program coordinators:

- Prof. Dr. Wolfgang Baumgärtner, Ph.D, Dipl. ECVP
- Prof. Dr. Marion Hewicker-Trautwein, Dipl. ECVP
- Dr. Peter Wohlsein, Dipl. ECVP
- Dr. Andreas Beineke, Dipl. ECVP
Program structure:

1) Pathology training:

a. Necropsy:

The aim of this part is to get practical and theoretical skills in necropsy techniques and post mortem diagnostic investigations. For two months each year, the resident will work in diagnostic pathology section. Approximately 2,000 animals are examined each year in the Department. The case load includes companion animals, horses and farm animals, including poultry as well as a variety of zoo and wildlife animals, including birds and reptiles. Animal carcasses are submitted for necropsy by the local veterinary teaching hospitals and private veterinary clinics or practitioners. Medical history and clinical findings of all necropsy cases will be preliminary discussed together with the attending pathologist and other residents prior to necropsy. Additionally, gross findings will be demonstrated in necropsy rounds at noon of each day. After an orientation period under the supervision of a senior pathologist the residents have to perform necropsies. Furthermore, the resident will by him/herself teach undergraduate veterinary students to learn appropriate necropsy techniques and to perform post mortem investigations. The resident will be trained in tissue trimming and different tissue preparation and staining techniques. Histology slides should be read by the resident him/herself, followed by the discussion of slides and diagnoses with the senior and board-certified veterinary pathologist at a multiheaded microscope. For more detailed classification of tumors and an etiological diagnosis immunohistology and in situ hybridization will be employed. The final necropsy report should be written by the resident and will be reviewed by the senior pathologist and will include interpretation of morphological findings and results of additional laboratory investigations.
b. Surgical pathology:
Starting in the third year the veterinary resident will be trained in the adequate preparation and diagnostic investigation of biopsy samples. Each year approximately 6,000 biopsies are examined in the Department. The resident will work in the diagnostic biopsy section for one month each year. The case load includes predominantly cats, dogs, and horses as well as farm animals and exotics. Samples will be submitted from the local veterinary teaching hospitals and private veterinary clinics or practitioners. Under the supervision of a senior pathologist the resident will obtain further skills and knowledge in histological slide description and phrasing morphologic diagnoses. For more detailed classification of tumors and etiological diagnosis immunohistology and in situ hybridization will be employed.

c. Laboratory investigation:
Routine tissue preparation and histological staining techniques, including different special staining protocols will be performed by veterinary technicians. Additionally, diagnostic techniques such as immunohistochemistry, electron microscopy, molecular techniques and tissue culture are available in the associated research laboratories. Pathology residents will get insights in these techniques by participating in different research laboratory seminars in a rotating manner:
- Routine diagnostic laboratory: tissue processing, histological staining techniques, including special staining protocols
- Immunopathology: immunohistochemistry, immunofluorescence, densiometry, Western blotting
- Electron microscopy: transmission and scanning electron microscopy, immunoelectron microscopy
• Tissue culture: cell isolation and culturing, magnetic cell sorting, virus neutralization assay, zymography
• Molecular biology: (RT)-PCR, Real-time PCR, in situ hybridization, molecular cloning techniques

2) Research program:
The combined research/residency program will provide the resident with experiences in modern laboratory techniques for the preparation of a doctoral or Ph.D. thesis. The main research fields at the Department of Pathology focus on neuropathology, immunopathology, cancer research and gastroenterology. The collaboration with other researchers and weekly laboratory meetings will give the resident the chance for intellectual and scientific communication. The pathology resident should publish the research data in adequate form in scientific journals. Additionally, he/she is encouraged to write case reports and publications in diagnostic pathology with the support of a senior pathologist.

3) Board preparation:
The facility provides the pathology resident with all materials for an adequate preparation for the board examination. The library contains all journals, books, and online accesses recommended on the reading list for board preparation by the European College of Veterinary Pathologists. In addition, seminars in relevant topics, such as slide description, gross pathology, comprehensive pathology and general pathology will be held periodically by board certified lecturers:
• Gross pathology (daily): macroscopic findings will be demonstrated in necropsy rounds.
• AFIP slide seminar (weekly during the semester): training of histological slide description and discussion of etiology and pathogenesis of diseases.
• ECVP board preparation (weekly during the semester): training of the different parts of the ECVP examination (gross pathology, slide description, comprehensive and general pathology).

• Journal club (weekly during the semester): discussion of relevant publications in veterinary diagnostic pathology and research.

• Clinicopathology rounds (weekly during the semester): interactive seminar with clinicians from different teaching hospital sections (small animals, ruminants, swine, horses, exotics) and presentation of selected cases with discussion of clinical and pathological findings.

• Oncology rounds (monthly during the semester): interactive seminar with clinicians from the small animal teaching hospital and presentation of selected cases with discussion of clinical and pathological findings.

• Neurology and neuropathology rounds (monthly during the semester): interactive seminar with clinicians from the small animal teaching hospitals and demonstration of selected cases with discussion of clinical and pathological findings.

• Lectures and slide seminars (periodically during the semester) in systemic pathology, including skin pathology, neuropathology, gastrointestinal tract diseases, etc.

• Toxicological pathology courses (every second month): laboratory animal pathology, toxicology of the liver, urinary tract, respiratory tract, female and male reproductive tract, kidney, cardiovascular system, hematopoietic and and immune system, gastrointestinal tract, skin and mammary gland, nervous system including eyes and hearing apparatus, skeletal and muscular system and endocrine system including lectures and slide seminars (classical examples).