

Part One

New applications for ACVIM Residency Training Programs must be received by the Residency Training Committee 90 days prior to any residents beginning training. Before completing this form, please review the general and specific requirements for Neurology Residency Training Programs in the ACVIM Certification Manual (CM). The most current version of the CM is available on the ACVIM website at www.ACVIM.org. If there is a discrepancy between this form and the CM, the CM will be considered correct, however, please contact the ACVIM office or the Residency Training Committee Chairperson for clarification.

Prior to making significant changes in a Residency Training Program, approval of the ACVIM and Neurology Residency Training Committee must be obtained. The Candidate and/or Program Director must notify ACVIM, in writing. Significant changes could include, but are not limited to: changes in Program Director or advisors, transferring from one program to another, alterations in program duration, locations of secondary site training, switching to a 'dual board' program, or enrolling in an institutional graduate program.

Notice: This form contains questions for three separate purposes; data collection that ACVIM must maintain for its accreditation as a specialty college; data collection for each specialty to evaluate what is appropriate for residency programs; and data collection to evaluate this Residency Training Program for renewal. It is important that all questions be answered accurately and completely, even if the answer to a specific question is not essential for a program's renewal.

For multi-site residency programs: To ensure uniformity of training and compliance with current CM requirements, training programs that include multiple sites must provide detailed information regarding supervision and facilities available at each specific site(s). Multi-site programs, if any, are listed in Part Two.

Program Director Name :

(Must be a Diplomate of ACVIM in the Specialty of Neurology or an approved Diplomate of the European College of Veterinary Neurology)

Program Director's Contact Information:

Work Phone:	<input type="text" value="(919) 513-6231"/>
E-mail:	<input type="text" value="Karen_Munana@ncsu.edu"/>
Mailing Address:	<input type="text" value="Clinical Sciences, CVM"/>
	<input type="text" value="1052 William Moore Drive"/>
	<input type="text" value="Raleigh, NC 27607"/>

1. Location of Sponsoring Institution (Primary Site of Training Program):

Primary Site and Length of Program:

Multi-site programs, if any, are listed in Part Two.

2. Resident Advisor(s): Must be a Diplomate of ACVIM in the Specialty of Neurology or a Diplomate of ECVN.

Natasha Olby Karen Munana Christopher Mariani Peter Early
--

3. Supervising Diplomates in Neurology: Must be a Diplomate of ACVIM in the Specialty of Neurology or a Diplomate of ECVN.

Karen Munana - Neurology
Natasha Olby - Neurology
Christopher Mariani - Neurology
Peter Early - Neurology

4. All Diplomates of ACVIM or ECVIM responsible for supervision of clinical training who are specialists in areas other than Neurology.

Edward Breitswerdt - SAIM
Jody Gookin - SAIM
Bernie Hansen - SAIM
Karyn Harrell - SAIM
Eleanor Hawkins - SAIM
Shelly Vaden - SAIM
Adam Birkenheuer - SAIM
Katharine Lunn - SAIM
Karen Tefft - SAIM
Paul Hess - Oncology and SAIM
Steven Suter - Oncology
Joanne Intile - Oncology
Sandy Tou - Cardiology and SAIM
Teresa DeFrancesco - Cardiology
Bruce Keene - Cardiology

5. Residents currently participating in your training program, along with the beginning date of the program, expected ending date of the program, and designated Resident Advisor.

Resident Name, Dates of Program, (Resident Advisor)
Bethany Pastina 7.15.15 - 7.14.18 (Peter Early)
Jeanie Lau 7.15.2016 - 7.14.2019 (Karen Munana)
Natalie Zidan 7.15.17 - 7.14.20 (Natasha Olby)
Lauren Green 7.15.17 - 7.14.20 (Christopher Mariani)
Shelby Mancini 7.15.18 - 7.14.21 (Peter Early)

Please note, any Program Director or Candidate that significantly changes or alters their Residency Training Program before completion must notify ACVIM, in writing, before the changes are made to ensure that the proposed changes are approved.

Significant changes could include, but are not limited to:

- transferring from one program to another
- alterations in program duration

- **switching to a 'dual board' program**
- **enrolling in an institutional graduate program**
- **change of Program Director or Resident Advisor**



RESIDENCY TRAINING PROGRAM REGISTRATION
2018-2019
NEUROLOGY

Part Two

Part Two of the Neurology Residency Training renewal process addresses general features of the program that apply to all current residents. These questions will be used to provide the Residency Training Committee with information needed to judge the structure, quality, scope, and consistency of training provided.

Current Date:

Program Director Name:

(Must be a Diplomate of ACVIM in the Specialty of Neurology or an approved Diplomate of the European College of Veterinary Neurology)

Name of Sponsoring Institution (Residency Training Program):

1. **For multi-site residency programs:** To ensure uniformity of training and compliance with current Certification Manual (CM) requirements, training programs that include multiple sites must provide detailed information regarding supervision and facilities available at each specific site(s).

Secondary Site/Outside Rotations (if applicable):

(Please include the following for each site: Supervising Diplomate (ACVIM or other specialty), amount of time scheduled at the site and training requirements to be met.

2. Length of Training Program:

	Yes
2 years	<input type="checkbox"/>
3 years	<input checked="" type="checkbox"/>
Other -provide details	<input type="text"/>

3. Advanced Degree:

	Yes	No	Optional
Masters:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
PhD:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Briefly explain how the degree is integrated into the residency program:

4. Please list all ACVIM Supervising **Diplomates** (Cardiology, Large Animal Internal Medicine, Neurology, Oncology, Small Animal Internal Medicine, ECVIM, or ECVN Diplomates) providing supervision off-site and explain the situation and the agreements provided for contact with the resident. (Note, in Part One, current ACVIM Supervising Diplomates are included; and you are requested to provide additional comments for off-site supervision here).

Name of Diplomat(e)s	Comments
N/A	

5. Please list all **Diplomates** of the American College of Veterinary Pathology or the European College of Veterinary Pathologists in the areas of clinical pathology or gross/histopathology associated with residency training. If off-site, please explain the situation, and the method of providing direct contact with the resident.

Name of Diplomat(e)s	Clinical or Gross	Comments
Jennifer Neel	Clinical	
Devorah Stowe	Clinical	
Mac Law	Gross	
John Cullen	Gross	
Keith Linder	Gross	
Luke Borst	Gross	
Jennifer Luff	Gross	
Heather Shive	Gross	
Deb Tokarz	Gross	

6. Please list all **Diplomates** of the American College of Veterinary Radiology or the European College of Veterinary Diagnostic Imaging associated with residency training. If off-site, please explain the situation, and the arrangements for direct contact with the resident.

Name of Diplomat(e)s	Comments
Ian Robertson	
Gabriela Seiler	
Erin Kennihan	
Eli Cohen	
Nate Nelson	
Maria Evola	

7. Please list all **Diplomates** available for consultation in the areas of dermatology, surgery, ophthalmology, anesthesiology, emergency/critical care, clinical nutrition, clinical pharmacology, behavior, and/or theriogenology. If off-site, please explain the situation and the arrangements provided for contact with the resident.

Name of Diplomat(e)s	Specialty	Comments
Thierry Olivry	Dermatology	
Marcy Murphy	Dermatology	
Petra Bizikova	Dermatology	
Kyle Mathews	Surgery	
Simon Roe	Surgery	
Duncan Lascelles	Surgery	
Chris Adin	Surgery	
Valery Scharf	Surgery	

Brian Gilger	Ophthalmology	
Mike Davidson	Ophthalmology	
Hans Westermeyer	Ophthalmology	
Freya Mowat	Ophthalmology	
Lysa Posner	Anesthesia	
Nigel Campbell	Anesthesia	
Kristen Messenger	Anesthesia	
Kate Bailey	Anesthesia	
Maria Killos	Anesthesia	
Bernie Hansen	ECC	
Terri DeFrancesco	ECC	
Alex Lynch	ECC	
Korinn Saker	Nutrition	
Mark Papich	Pharmacology	
Kristen Messenger	Pharmacology	
Scott Bailey	Therigenology	
Sarah Lyle	Therigenology	
Barbara Sherman	Behavior	

8. Please list the residents who have completed the training program within the last five years, including the year that each individual's training program ended and whether the individual has completed the Board certification process.

Name(s)	Program End Date (mm/dd/yyyy)	Diplomate? (Yes or No)
Aude Castel	7/14/17	Yes
Kathryn Bray	7/14/16	Yes
Rennie Waldron	7/14/15	Yes
Melissa Lewis	7/14/14	Yes
Katherine Crook	7/14/13	Yes
Malte Schwartz	7/14/13	Yes

9. Please list the residents currently participating in your training program, along with the beginning date of the program, expected ending date of the program, and designated resident advisor.

Resident Name(s) (first/last)	Length of Program (in years)	Program Start Date (mm/dd/yyyy)	Program End Date (mm/dd/yyyy)	Resident Advisor Name(s)
Beth Pastina	3 yrs	7/15/15	7/14/18	Early
Jeanie Lau	3yrs	7/15/16	7/14/19	Muñana
Natalia Zidan	3yrs	7/15/17	7/14/20	Olby
Lauren Green	3yrs	7/15/17	7/14/20	Mariani
Shelby Mancini	3 yrs	7/15/18	7/14/21	Early

The following questions will be used to provide the Residency Training Committee with information needed to judge the structure, quality, scope, and consistency of training provided.

NOTE: Direct supervision is required during clinical training, with the time required specified by each particular specialty. Direct supervision is defined as follows: The Supervising Diplomate and resident are participating in a clinical practice in which both the Diplomate and the resident are on duty and interactively and concurrently managing cases. The Diplomate need not personally examine each patient seen by the resident, but must remain physically available for consultation. Please use this definition when responding to the following questions regarding clinical rotations.

10. Is this a traditional or non-traditional residency training program? A traditional neurology residency is a two (2) or three (3) year postgraduate training program, with a minimum of ninety six (96) weeks of supervised clinical training with

a majority of the time spent at one location. A non-traditional neurology residency allows for training that may occur in non-contiguous blocks of time over an extended time period.

Traditional	<input checked="" type="checkbox"/>
Non-traditional	<input type="checkbox"/>

For non-traditional programs, please provide a detailed description of the residency program, including length of program, proposed annual schedule, and the amount of time of direct Diplomate supervision for each location of the residency.

N/A

11. The ACVIM Neurology Certification Manual (CM) requires that each resident experience 75 weeks (minimum) of clinical Neurology training under the supervision of either a Diplomate of ACVIM in the Specialty of Neurology or a Diplomate of ECVN. **The 75 weeks should include at least 50 weeks of direct supervision (see definition in CM) and the remainder as indirect supervision (indirect supervision is satisfied by the Supervising Diplomate Neurologist being available for face-to-face contact with the resident at least 4 days per week).**

Please provide an outline of planned yearly schedule, including number of weeks of direct and indirect supervision (i.e. in year 1, the resident will be directly supervised for 25 weeks etc.) A table similar to the example below outlining the proposed weekly schedule of duties for the residents should be provided:

EXAMPLE TABLE ONLY:

	Year I	Year II	Year III
Medical Neurology *			
Neurosurgery			
Neurology/Neurosurgery Direct Supervision	36	36	
Neurology/Neurosurgery - Indirect Supervision			34
Internal Medicine	4	2	2
Clinical Pathology	2		
Radiology	2		
Neuropathology		2	2
Other Rotation (please list the name of each rotation)			
		1	
	2	4	4
Research	4	5	8
Independent Study			
Vacation	2	2	2
Total	52	52	52

Numbers indicated are in “weeks”.

* Many residencies are a combined neurology / neurosurgery program with no distinct separation between the services. Some programs, however, have separate training with a surgery service and this example includes that possibility in describing the weekly rotations.

The example table is only a listing of a proposed weekly schedule for each of the three years of a typical 3-year residency program, including all that is required by ACVIM without making any specific recommendations.

Please indicate the outline of planned yearly schedule here:

	Year I	Year II	Year III
Medical Neurology *			
Neurosurgery			
Neurology/Neurosurgery - Direct Supervision	39	34	34
Neurology/Neurosurgery - Indirect Supervision	0	0	0
Internal Medicine	4	2	
Clinical Pathology		2	
Radiology	2		
Neuropathology	2		
Other Rotation (please list the name of each rotation):			
Other: Orthopedic Surgery			2
Other: Electrodiagnostics/Other outrotation		2	2
Research	3	4	4
Independent Study		6	8
Vacation	2	2	2
Total *	52	52	52

*The totals should add up to 52 weeks.

12. Describe how daily clinical case rounds are conducted and supervised:

Clinical rounds are typically conducted twice daily, and are attended by supervising diplomates, house officers, students and service technicians. Morning rounds are held Monday-Friday, during which hospitalized cases are discussed in detail (examination findings, neurolocalization, differential diagnoses, diagnostic plan, diagnostic findings, treatment plan and patient status). Afternoon rounds are held as time permits, during which the findings of the day are summarized and the patient status updated. If the clinic schedule does not permit the majority of service members to be present for afternoon rounds, then the supervising diplomate will round individually with each resident on his or her cases at the end of the day.

13. The neurology specialty requires that the resident spend at least 50 hours during the residency in the following rotations: Radiology, Clinical Pathology, Neuropathology and Neurosurgery. A Training Agreement Form must be completed and signed by the Diplomate supervising the required training, regardless of whether the training occurs on site or off-site. **Please use the standardized “Training Agreement Form” found on the ACVIM website (www.ACVIM.org) to document proof of supervision for all required contact hours (clinical pathology, radiology, neuropathology surgery, etc.) in rotations other than neurology.** 1 Training Agreement form is required per rotation per resident at the beginning of the residency. Forms do not need to be resubmitted each year as long as a valid Training Agreement Form is on file.

In addition, please provide a brief description of how each phase of this required training is accomplished.

Radiology: 50 hours with a Board-certified radiologist interpreting radiographs, attending seminars and participating in and evaluating the results of special radiographic procedures.

The resident is scheduled for a two-week rotation on Radiology during the training program. In addition, Neuroradiology MRI rounds are held every month and are attended by members of Radiology and Neurology. During these rounds, MRs from clinical cases are reviewed and specific topics related to neuroimaging are discussed. The resident also has the opportunity to review neurodiagnostic studies one-on-one with a Radiologist on clinic duty.

Clinical Pathology: 50 hours with a Board-certified pathologist or clinical pathologist evaluating clinical pathologic findings, attending clinicopathologic conferences, and examining surgical sections.

The resident is scheduled for a two-week rotation on Clinical Pathology during the training program. In addition, the resident will periodically review CSF cytology from clinical cases with the Clinical Pathologist on duty.

Neuropathology: 50 hours devoted to review of veterinary neuropathology. This time may be spent in lecture series, seminars, or a formal training program recognized and approved by the college.

The resident is scheduled for a two-week rotation on Anatomic Pathology. During the rotation, the resident performs necropsies on cases with neurologic disease under the supervision of a faculty pathologist. The resident participates in removing the brain or spinal cord, describing gross lesion(s), and assessment of histologic changes. In addition, Neuropathology rounds are held every month, in which a board certified anatomic pathologist will review clinical cases or lead a discussion on a neuropathology topic for neurology and pathology residents.

Neurosurgery: 50 hours participating in veterinary neurosurgical procedures. Please provide a specific description of the type of participation [i.e. observation, performance of neurosurgery], and credentials of those providing the training [i.e. ACVS vs. ACVIM Neurology]. A Training Agreement Form must be completed if this training is provided by individuals other than the ACVIM (Neurology) or ECVN supervising Diplomate for the residency training program.

All neurosurgical procedures are performed by the neurology service (ACVIM Neurology diplomates) at our institution. The neurology diplomates all received focused neurosurgical training during their residency program. The neurology residents at NC State perform neurosurgical procedures, and are expected to be proficient in these procedures upon completion of their training program.

14. The neurology specialty requires that the resident be able to perform and interpret current electrodiagnostic procedures. Briefly state how the concepts of electrodiagnostics (including EEG) and their clinical application will be taught to residents during the training program. Specifically state whether or not the resident will have hands-on electrodiagnostics experience:

The residents have hands-on electrodiagnostic experience. The Neurology service routinely performs electrodiagnostic testing, including BAER, EMG and NCV on clinic patients when there is an indication to do so. EEGs are performed on clinical patients by one of the faculty (Mariani), and residents are involved in these studies. In addition, EEG techniques and interpretation, as well as general electrodiagnostic principles are covered in the neurology resident review rounds.

15. The college requires that the resident spend a minimum of 80 hours involved in routine and regular participation in a critical review of the literature (e.g. journal club) during the residency training program. Please explain how this requirement is met:

Journal club is held one a week, during which current literature is critically reviewed. Journal club is attended by Neurology residents and faculty.

16. The neurology specialty requires that the advisor meet with the resident at 6 month intervals to assess, review and critique the resident's progress and weekly schedule of activities. Please explain how this is accomplished:

The resident meets with the Neurology faculty twice a year to review his or her progress in the training program and to assure that requirements are being met. Semiannual evaluation of the resident's progress is required of all house officer programs at our institution.

17. The neurology specialty requires that the resident complete a significant research or clinical investigative project. Please describe how you plan for the resident to undertake, monitor, and complete a project. Include a timeline that the resident and mentor will use as a guide for completion of the project. Note that publication of this research project is not a requirement.

The resident meets with his or her advisor shortly after beginning the program to discuss ideas for research projects. The resident is scheduled for time devoted to research during each of the three years of the residency program. The resident's progress on the research project is discussed at the semiannual evaluations. It is expected that the resident will present the results of the research project at the ACVIM forum in the second or third year of the training program. Completion of a research project is a requirement of the program, and failure to do so could result in withholding of the residency certificate.

18. Please indicate the availability of the following facilities or equipment. Indicate if these are available at the primary training site, or at a different location. (In the Location column, indicate on-site for primary location or the name of the facility where the equipment is located if off-site.) For facilities that are not on-site, please describe the situation and availability in the space at the end of this section. Please also provide the manufacturer and model of the unit for electrodiagnostic and imaging equipment.

	Available?		Location of equipment?
	Yes	No	(On-site or list site name)
a) Standard radiological equipment	<input checked="" type="checkbox"/>	<input type="checkbox"/>	On-site
b) Ultrasonographic equipment	<input checked="" type="checkbox"/>	<input type="checkbox"/>	On-site
c) Clinical Pathology capabilities: (includes CBC, serum chemistries, blood gases, urinalysis, cytology, parasitology, microbiology, and endocrinology)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	On-site
d) Electrocardiography	<input checked="" type="checkbox"/>	<input type="checkbox"/>	On-site
e) Blood Pressure Measurement	<input checked="" type="checkbox"/>	<input type="checkbox"/>	On-site
f) Radiation Therapy Facility	<input checked="" type="checkbox"/>	<input type="checkbox"/>	On-site
g) Veterinary Library w/Literature Searching Capabilities	<input checked="" type="checkbox"/>	<input type="checkbox"/>	On-site
h) Computerized Medical Records w/Searching Capabilities	<input checked="" type="checkbox"/>	<input type="checkbox"/>	On-site
i) Medical Library w/Literature Searching Capabilities	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Duke, UNC
j) Electromyography and nerve conduction velocity testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	On-site; Nicolet Viking Quest, Cadwell Sierra II
k) Evoked Response Equipment	<input checked="" type="checkbox"/>	<input type="checkbox"/>	On-site; Nicolet Viking Quest
l) Electroencephalography	<input checked="" type="checkbox"/>	<input type="checkbox"/>	On-site; xltek EEG 32U
m) Computed Tomography	<input checked="" type="checkbox"/>	<input type="checkbox"/>	On-site; Siemens Somatom Sensation 64

n) Magnetic Resonance Imaging (include field strength)

<input checked="" type="checkbox"/>	<input type="checkbox"/>	On-site; Siemens Magnetom Symphony 1.5T
-------------------------------------	--------------------------	---

If any of the above equipment or facilities is available off-site, please explain how the resident can access them for case management, research, or study, *especially with respect to the use of imaging equipment*:

Resident has access to medical libraries at Duke and UNC; articles can be ordered from these libraries and sent electronically. MRI is available through AnimalScan, which is located in NC State Veterinary Hospital.

19. Describe the formal conferences, such as clinicopathologic conferences, journal clubs, or seminars that are held on a regular basis. Please provide a description and the typical schedule for these:

Neurology journal club – weekly; journal articles are reviewed and critically discussed
Internal Medicine house officer rounds – weekly; a clinical case is discussed in detail, focusing on pathophysiology and current literature pertaining to the problem or disease process, or a topic is presented by a faculty member
House officer seminars – weekly; formal presentation by a resident or intern, which typically is a review of a topic of interest and summary of research findings when applicable
Cardiology/Critical Care rounds – weekly; covers ECG interpretation, as well as emergency management of different medical conditions
Neuroradiology MRI rounds –monthly; MRs from clinical cases are reviewed and specific topics related to neuroimaging are discussed
Neuropathology rounds –monthly; gross and histologic findings from clinical cases are reviewed and discussed, or a topic related to Neuropathology is covered.
Neurology resident review – weekly: topics such as neuroanatomy, neurophysiology and electrodiagnostics are discussed in detail, with presentations by both faculty and residents.

20. Detail the teaching responsibilities expected of the resident during the training program. This may include lectures in departmental courses for veterinary students, grand rounds presentations, presentation of papers or seminars at conferences, or participation in continuing education programs.

The resident is required to give one or two in-house formal presentations in the House Officer Seminar Series during the 3-year training program. In addition, the resident is scheduled to give prepared presentations as part of Internal Medicine house officer rounds and Neurology resident review.

21. How many major veterinary medical or medical meetings are each resident able to or expected to attend during his/her training program?

None	One	Two	> Two
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Comments: The resident is expected to attend the ACVIM forum during the 2nd and 3rd year of the training program, as well as the Neuroscience course.

22. Are one or more publications required as part of the training program?

Yes	No	Number
<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Comments: Residents are strongly encouraged to publish results of a research project, but this is not a requirement of the program.

23. Please describe any additional pertinent information that the Residency Training Program should consider in its evaluation of this Training Program.

N/A

Please note, any Program Director or Candidate that significantly changes or alters this Residency Training Program before completion must notify ACVIM, in writing, before the changes are made to ensure that the proposed changes are approved.

Significant changes could include, but are not limited to:

- transferring from one program to another
- alterations in program duration
- switching to a 'dual board' program
- enrolling in an institutional graduate program
- change of Program Director or Resident Advisor

I verify that the above information is an accurate reflection of this Residency Training Program.

Per the Certification Manual, each year, the Program Director (PD) must certify to the RTC/ RTCC and ACVIM, in writing, that they have read the ACVIM Certification Manual and understands their role in residency training.

Checking this box is an indication I have read the ACVIM Certification Manual and understand my role in the Residency Training Program.