The University of Alabama at Birmingham

NEUROBIOLOGY GRADUATE PROGRAM

STUDENT HANDBOOK 2003-2004

UAB
NEUROBIOLOGY
GRADUATE STUDENT HANDBOOK
2003-2004

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DEPARTMENTAL DESCRIPTION & MISSION

The Department of Neurobiology is a highly productive research and education-oriented unit in the University of Alabama at Birmingham. It is one of 8 Joint Health Science departments in the Schools of Medicine and Dentistry. The primary missions of the Department are to foster and enhance fundamental and innovative research and graduate training in Neurobiology and to provide outstanding teaching to students in professions such as Medicine, Dentistry, Optometry and the Graduate School. Founded in 1996, the Department is a young but highly regarded unit, having received considerable recognition for the faculty's contributions to Neuroscience. This recognition is evidenced by the Neurobiology faculty's numerous publications in high impact journals, service of many of the faculty on NIH or NSF study sections, receipt of over 8 million dollars in annual research grants, recognition by awards from several major national foundations including the Lucille P. Markey Foundation, the C. W. Keck Foundation and the Alfred P. Sloan Foundation, and numerous awards and invitations to speak at national and international research symposia.

Our Neurobiology Department faculty members are among the most successful in the country in being awarded extramural research funding per faculty member. The Department currently has two major NIH interdisciplinary Center/Program grants, including a Mental Retardation Research Center and a Cerebral Cortex Development Program Project. One faculty member is a U. S. Congress Senator Javits Neuroscience Award winner, another has received the American College of Physicians Menninger Award for mental health research, and another is the recipient of HHMI institutional young investigator career development award. Several faculty are recent invited participants of Gordon Conferences and Howard Hughes Medical Institute (HHMI) Conferences. The Department of Neurobiology is housed in the Civitan International Research Center with laboratory and office space of 25,000 square feet. The laboratories are well-equipped and include state of the art facilities for transgenic animal technologies, patch-clamp electrophysiology, high resolution cellular imaging, cell culture, heterologous protein expression, molecular biology and biochemistry, and electron and laser scanning confocal microscopy. The Department also maintains a departmental library with current issues of leading journals in Neurobiology.

Neurobiology is a highly interdisciplinary endeavor, which is reflected in the faculty's laboratories. Research in the department utilizes molecular genetic tools, molecular isolation of novel nervous system proteins and development of specific probes to study these proteins, whole cell and single channel patch- and voltage-clamp recording, subcellular high resolution imaging of cellular calcium and voltage responses, confocal and electron microscopic analysis of neuronal structure, X-ray microanalysis of neuronal processes, oocyte expression of mRNAs to study receptor biophysics and pharmacology, site-directed mutagenesis, characterization of signaling cascades, examination of the neuronal and glial cell cytoskeleton, brain tumorogenesis and proliferation, and *in vivo* electrophysiological and pharmacological analysis of synaptic signaling in neuronal networks. While the focus of the Department's research is on the molecular and cellular basis of normal structure and function of the nervous system, much of the work by faculty in the Neurobiology Department addresses major issues in neurological health and disease, including stroke, epilepsy, brain tumors, addiction, Alzheimer's disease, Parkinson's disease, Alexander disease, brain and spinal cord injury, mental retardation and developmental disorders, perceptual disorders, learning and memory, and Circadian rhythm disorders.

The Neurobiology Graduate Program's mission is to train a new generation of neuroscientists who have the breadth of understanding in the fundamentals of modern neurobiological research ranging from molecular to systems' approaches, and the depth of training in specific areas that will enable them to become leading contributors to the health-related brain research enterprise. Interested students also have the opportunity to receive training in Neurobiology of disease with a focus on clinical research topics from Neurology, Neurosurgery, Psychiatry, Pediatrics and Rehabilitation Medicine that will provide a unique perspective for fundamental neuroscience research and teaching careers at academic health science centers.

NEUROBIOLOGY PRIMARY FACULTY

NAME	RANK	PHONE	ADDRESS	EMAIL
Friedlander, Michael	Professor & Chair	4-0100	CIRC 137	mjf@nrc.uab.edu
Hablitz, John	Professor	4-0742	CIRC 510A	hablitz@nrc.uab.edu
Mangel, Stuart	Professor	5-5095	CIRC 425B	mangel@nrc.uab.edu
Weiss, David	Professor	5-5093	CIRC 410B	dweiss@nrc
Brenner, Michael	Associate Professor	4-1011	SRC R552	aaron@nrc.uab.edu
Lester, Robin	Associate Professor	4-4483	CIRC 560C	rlester@nrc.uab.edu
Mei, Lin	Associate Professor	5-5196	SRC 546C	lmei@nrc.uab.edu
Theibert, Anne	Associate Professor	4-7278	CIRC 576A	theibert@nrc.uab.edu
Dobrunz, Lynn	Assistant Professor	4-7923	CIRC 590	dobrunz@nrc.uab.edu
Pozzo-Miller, Lucas	Assistant Professor	5-4659	CIRC 429A	pozzomiller@nrc.uab.edu
Wilson, Scott	Assistant Professor	5-5573	CIRC 593	wilson@nrc.uab.edu
Zhou, Yi	Assistant Professor	4-5626	SRC 543C	yzhou@nrc.uab.edu

NEUROBIOLOGY SECONDARY FACULTY

NAME	RANK	PRIMARY APPOINTMENT	PHONE	ADDRESS	EMAIL
Amthor, Franklin	Professor	Psychology	4-2694	CH 229 1170	amthorfr@uab.edu
Benos, Dale	Professor	Phys. & Biophys.	4-6220	MCLM 705 0005	benos@uab.edu
Benveniste, Etty	Professor	Cell Biology	4-7667	MCLM 350 0005	tika@uab.edu
Blalock, J. Edwin	Professor	Phys. & Biophys.	4-6439	MCLM 896 0005	blalock@uab.edu
Britt, William J.	Professor	Pediatrics	4-3092	CHT 752 0011	wbritt@peds.uab.edu
Dacheux, Ramon	Professor	Ophthalmology	325-8663	EFH BASE, 0009	dacheux@uab.edu
Gamlin, Paul	Professor	Physiological Optics	4-0322	WORB 626 4390	pgamlin@uab.edu
Johnson, Gail	Professor	Psych. & Behav. NB	4-2465	SC 1061 0017	gvwj@uab.edu
Keyser, Kent	Professor	Physiological Optics	5-7225	WORB 626 4390	ktkeyser@uab.edu
Kirk, Kevin	Professor	Phys. & Biophys.	4-3122	MCLM 982B	klkirk@uab.edu
Marchase, Richard	Professor & Assoc. Dean for Research	Cell Biology	4-1294	MCLM 690 0005	marchase@uab.edu
Mays, Lawrence	Professor	Physiological Optics	4-1158	WORB 636 4390	lmays@uab.edu
Percy, Alan	Professor	Pediatrics/Neurology	4-4974	ACC 516 0011	apercy@uab.edu
Rosenfeld, Steven	Professor	Neurology	4-1813	MEB 510 3295	s_rosenfeld@email.neuro.uab.edu
Roth, Kevin	Professor	Pathology	4-4303	SC 961	karoth@uab.edu
Wyss, J. Michael	Professor	Cell Biology	4-6086	THT 950 0006	jmwyss@uab.edu
Carroll, Steven	Associate Professor	Pathology	4-9828	SC 894 0017	carroll@path.uab.edu
Cobbs, Charles	Associate Professor	Neurosurgery	4-1674	MEB 515 3295	cscobbs@uabmc.edu
Detloff, Peter	Associate Professor	Biochem. & Mol. Gen.	5-8157	KAUL 540B 0024	detloff@uab.edu
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Kraft, Timothy W.	Associate Professor	Physiological Optics	5-2885	WORB 612 4390	twkraft@uab.edu
Loop, Michael	Associate Professor	Physiological Optics	4-6751	WORB 610 4390	loop@uab.edu
Ruden, Douglas	Associate Professor	Environ. Health Sciences	4-7042	RPHB 623B 0022	douglasr@uab.edu
Estevez, Alvaro	Assistant Professor	Phys. & Biophys.	4-4271	MCLM 850 0005	aestevez@uab.edu
Marques, Guillermo	Assistant Professor	Cell Biology	5-8851	MCLM 670 0005	gmarques@uab.edu
McMahon, Lori	Assistant Professor	Phys. & Biophys.	4-3523	MCLM 964 0005	mcmahon@uab.edu
Nicholas, Anthony	Assistant Professor	Neurology	5-8509	JT 1225	nicholas@uab.edu

CURRENT NEUROBIOLOGY DOCTORAL GRADUATE STUDENTS

Student	School	Mentor	Phone	Location
Akhtar, Rizwan	Vanderbilt U., Nashville, TN	Roth	4-5802	SC 961
Amaral, Michelle	UAH, Hunstville, AL	Pozzo-Miller	4-6359	CIRC 429
Bandyopadhyay, Susanta	U. of Calcutta, India	Hablitz	4-0743	CIRC 552
Campbell, Susan	SUNY at Binghamton, NY	Hablitz	4-0743	CIRC 552
Campo, Claudia	San Diego St U	Weiss	5-5094	CIRC 410A1
Chapleau, Christopher	Carthage College, WI	Pozzo-Miller	4-6359	CIRC 429
Chapman, Carlene	Midwestern State U., TX	Theibert	4-1550	CIRC 137
Cho, Chang Hoon	Korea U., S. Korea	Lester	5-5099	CIRC 446
Crimmins, Stephen	U of Georgia	Wilson	5-5574	CIRC 589
Dobbins, Clem	Bowdoin Col, Maine	Mei	5-5197	SRC 546
Erkkila, Brian	Johns Hopkins U., MD	Weiss	5-5094	CIRC 410A1
Gerecke, Kim	U. of Richmond, VA	Wyss	4-5940	THT 950
Hudson, Willie	Howard U, Wash., DC	Rotation	4-1550	CIRC 137
Jin, Youngnam	Inha U, Korera	Rotation	4-1550	CIRC 137
Keros, Sotirios (Sam)	Duke U., NC	Hablitz	4-0743	CIRC 552
Khatri, Alpa	U of TN, Chattnooga	Weiss	5-5094	CIRC 410A1
Koontz, Thadeus	Vanderbilt U	Britt	4-3092	CHT 752
Kunz, Portia	Weber St U	Friedlander	4-6433	CIRC 525
Lee, Youngjin	Sungkyunkwan U., S. Korea	Brenner	5-0270	SRC 552
Li, Rong	Tianjian Medical U., PRC	Brenner	5-0270	SRC 552
Lu, Zhenjie	Jin Hua Health School, PRC	Garner	4-1550	CIRC 137
Mathew, Seena	Kenyon College	Hablitz	4-0743	CIRC 552
McCoy, Eric	Mercer U	Sontheimer	4-4455	CIRC 545
McFerrin, Michael	UAH, Huntsville, AL	Sontheimer	4-4455	CIRC 545
Olsen, Michelle	Oregon U., OR	Sontheimer	4-4455	CIRC 545
Parker, Julie	Quachita Baptist U., AR	Quick	5-5099	CIRC 446
Ranels, Heather	College of William and Mary, VA	Dobrunz	5-0220	CIRC 590
Saez Martinez, Ignacio	U of Navarre, Spain	Rotation	4-1550	CIRC 137
Sapp, Robert	Birmingham Southern	Lester	4-4485	CIRC 560
Scheiderer, Cary	U. of Minnesota, MN	Dobrunz/ McMahon	5-0220	CIRC 590
Sieber, Nola Jean	Centenary Col of LA	Sontheimer	44455	CIRC 545
Torres-Reveron, Juan	U. of Puerto Rico, Puerto Rico	Friedlander	4-6433	CIRC 525
Wang, Qiang	Shanghai Res. Ctr. of Life Sci., PRC	Mei	5-5196	SRC 546
Weaver, Amy.	Virginia Polytechnical Inst., VA	Sontheimer	4-4455	CIRC 545
Weber, Marcus	Indiana Wesleyan U., IN	Lester	4-1550	CIRC 137
Wen, Yuquan (Eddie)	Wuhan U., PRC	Mangel	4-1550	CIRC 137
Wheeler, Crystal	Brandeis U	Wilson	5-5574	CIRC 589

OTHER GRADUATE STUDENTS CURRENTLY TRAINING WITH NEUROBIOLOGY PRIMARY FACULTY

Student	School	Mentor	Program	Phone	Location
Lehman, Jonathan	Bradley University	Rotation	MSTP	5-5094	CIRC 410A
Pyle, Louise	Smith Col, MA	Sontheimer	MSTP	4-4455	CIRC 545
Rodgers, Erin	Louisiana St., LA	Theibert	Cell Biology	4-7923	CIRC 576
Whelan, Christa	Boston College	Sontheimer	MSTP	4-4455	CIRC 545

CURRENT NEUROBIOLOGY POSTDOCTORAL FELLOWS AND RESEARCH FACULTY

Fellows	Ph.D. Institution	Mentor	Phone	Location
Chung, W. Joon	Seoul National U., S. Korea	Sontheimer	4-4455	CIRC 545
Gavrikov, Konstantin	Leningrad St. U., Russia	Mangel	5-5096	CIRC 425
Huang, Yang-zhong	First Med U., Guangzhou, PRC	Mei	5-5197	SRC 546
Kalikulov, Djanenkhodja	Inst. of Biochemistry, Uzbekistan	Friedlander	4-6433	CIRC 525
Li, Xin Ru	U. of New South Water, Australia	Friedlander	4-6433	CIRC 525
Song, Weifeng	China Med. U., Shenyang, China	Lester	4-4485	CIRC 560
Su, Mu	Niigata U., Japan	Brenner	5-0270	SRC 556
Sun, Huaya	U. of Otago, New Zealand	Dobrunz	5-0220	CIRC 590
Wotring, Virginia	St. Louis U., MO	Weiss	5-5094	CIRC 410A1
Yang, Xiao-Li	Akita U. of Med. Sci., Japan	Mei	5-5197	SRC 546

RESEARCH FACULTY AND CORE DIRECTORS

	Ph.D. Institution	Phone	Location
Chang, Yongchang[1]	Sun Yat-Sen U. of Med Sci, PRC	5-5094	CIRC 410A1
Dmitriev, Andrey [1]	Leningrad S U., Russia	5-5096	CIRC 425
Filippova, Natalia[4]	Inst. of Developmental Biology, Russia	5-5094	CIRC 410A1
Ismailov, Iskander[1]	Inst. Phys. & Acad. Sci., Uzbekistan	4-6433	CIRC 525
Kim, Chang-Hoon[4]	Seoul Nat. U., S. Korea	5-5197	SRC 546
Lyons, Susan[4]	U. of North Carolina, Chapel Hill	4-4455	CIRC 545
Nelson, Gina[4]	U. of Colorado Health Science Center	5-9684	BMRII
Ribelayga, Christophe[4]	Inst. of Zoology, France	5-5096	CIRC 425
Wu, Yuying[3]	U of Minnesota	4-7927	CIRC 571

[1]Assistant Professor
[2]Research Assistant Professor
[3]Director of MMRC Imaging Core
[4] Research Associate

Ph.D. DEFENSES 2000-2003

		Date	Mentor
MacFarlane, Stacey	"*Role of Potassium Channels in Astrocyte Proliferation*"	2/00	Sontheimer
Chu, Zhiguo	*"Effects of Neuromodulators on Synaptic Transmission And Excitability in Frontal Neocortex"*	7/00	Hablitz
Fenster, Steve D.	*"Cloning and Characterization of Piccolo, A Novel Component of the Presynaptic Cytoskeletal Matrix"*	8/00	Garner
Wu, Hongju	*"Mechanisms That Regulate The Site-Specific Recruitment of SAP97 in Epithelial Cell"*	12/00	Garner
Ransom, Chris B.	"*Biophysical Changes Accompanying the Progression of Mammalian Glial Cells to Malignancy*"	1/01	Sontheimer
Chung, W. Joon	*"Cytoskeleton Proteins in Synapses"*	4/01	Garner
Zhai, Rong (Grace)	*"Assembling the Presynaptic Active Zone, Characterization of an Active Zone Precursor Vesicle"*	7/01	Garner
Deken, Scott L.	*"Regulation and Trafficking of GABA Transporters (GAT1)*	5/02	Quick
Liu, Xiaojin	"*Cloning and Functional Characterization of BK Channels Expressed in Human Glioma Cells"*	8/02	Sontheimer
Ritch, Patricia S.	*"ErbB Receptor Activation by NRG-1 Enhances Growth And Migration of Human Astrocytic Glioma Cells"*	2/03	Sontheimer

NEUROBIOLOGY GRADUATE PROGRAM ADMINISTRATION

Departmental Chair	Michael Friedlander, Ph.D.	CIRC 137	4-0100	mjf@nrc.uab.edu
Program Director	Anne Theibert, Ph.D.	CIRC 576	4-7278	theibert@nrc.uab.edu
Program Administrator	Cindy Urthaler	CIRC 137	4-1550	urthaler@nrc.uab.edu
Departmental Ombudsman	David Weiss, Ph.D.	CIRC 410B	5-5093	dsweiss@nrc.uab.edu

REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

IN THE DEPARTMENT OF NEUROBIOLOGY

The goals of the Neurobiology Graduate Program are to foster and enhance excellence in research and to provide strong graduate level education and training in modern Neuroscience. To accomplish these goals students are required to take a core curriculum in the first year that provides a general understanding in biochemistry, molecular biology, cell biology, genetics, cellular physiology, and integrative aspects of nervous system structure and function. In addition, students obtain research experience and identify potential mentors through laboratory rotations. In the second year, students participate in the Topics in Neurobiology course designed to broaden and reinforce understanding of basic and fundamental concepts in Neurobiology. The Topics course serves as the departmental qualifying exam. During the second year, students may also take required Neurobiology courses that were not completed in first year curriculum. In the third year, a formal written proposal of the student's dissertation project is submitted to and approved by the student's graduate dissertation committee. A number of advanced courses in neuroscience are available that students may take in the third and fourth years to expand the understanding and explore the detailed mechanisms of nervous system function. A combination of seminars, journal clubs and laboratory research will provide students with the necessary skills to design, perform and conduct an innovative and important research program.

- **Entrance into the Graduate Program in Neurobiology**

  Students may enter the Neurobiology Graduate Program through one of four mechanisms, by direct admission through the Neurobiology Department or from the Cellular and Molecular Biology (CMB) Program, the campus-wide Neuroscience Program, or the M.D./Ph.D. Program.

- **First Year Curriculum**

  All Neurobiology Ph.D. students are required to take the set of core courses for their particular entrance program during the first year of the graduate program. For M.D./Ph.D. students the core course curriculum is a two-year program. The core curricula are shown on pages 15-16 of this handbook. Students must receive grades of B or better in all the core courses. This requirement must be completed by the end of the second year.

- **Laboratory Rotations**

  In addition to taking core courses, students admitted directly into the Neurobiology program complete three laboratory rotations with Neurobiology primary faculty during their first year. For direct admit Neurobiology students, each of the three laboratory rotations will be concluded by a poster presentation or talk given by the student and evaluated by faculty judges. Students from the other programs such as CMB, Neuroscience or the M.D./Ph.D. program will have already completed their laboratory rotations before entering the Neurobiology program officially at the end of the first year.

- **Mentor Selection**

  Following completion of the laboratory rotation requirement, selection of a mentor is made during the summer following the first academic year (or after the second year for M.D./Ph.D. students). For students entering the Neurobiology Graduate Program directly, the mentor must have a primary appointment in the Department of Neurobiology. For students entering from the CMB, Neuroscience, or M.D./Ph.D. Programs, the mentor must have a primary appointment in the Department of Neurobiology or be a secondary faculty member who has been approved as a mentor for training Neurobiology students by the Neurobiology Graduate Committee. The mentor must be a member of the Graduate College.

- **The Second Year: Topics in Neurobiology**

  The curriculum for the second academic year for Ph.D. students or the third academic year for M.D./Ph.D. students is based on broadening and reinforcing an understanding of basic and fundamental concepts in Neurobiology. The centerpiece of the second year Neurobiology Program is the Topics in Neurobiology course, which also serves as the formal departmental qualifying exam.

  a) Five areas are emphasized in the Topics course (i) basic concepts in neurobiology, (ii) critical evaluation of original neurobiology research literature, (iii) oral presentation skills in exposition, analysis, and critiquing of neurobiology research topics, (iv) writing skills for evaluating research and designing experiments to evaluate relevant hypotheses, and (v) oral communication skills in demonstrating an understanding of concepts learned in the modules.

  b) The Topics in Neurobiology course has two sections, with each section organized into three month-long modules. The first Topics Section includes: Module 1-Genesis of the Nervous System, Module 2-Electrical Properties of Cells in the Nervous System, and Module 3- Synaptic Transmission: Chemical Communication in the Nervous System. The second Topics Section includes: Module 4-Signal Transduction in the Nervous System, Module 5-Regulation of the Internal Environment of the Central Nervous System, and Module 6-Neural Circuits.

  c) Evaluation of a student's progress in each module is based on performance in four areas: the formal research paper presentation and its discussion, participation in class discussions, the written critiques, and a short oral examination. The 15-20 minute oral exam is conducted at the end of each module by the module director and another faculty member. Students will be kept informed as to their performance during the modules and during the course. Students must receive a grade of B or better to pass the module. Students who pass the module as a whole but perform at a level below expectations in specific areas of evaluation will be required to take and pass a final exam at the end of the course. Failure of one of the topic modules requires satisfactory re-taking of that module the following year. Failure of two or more of the modules is grounds for dismissal from the program. Once a student has successfully completed and passed all six modules of the Topics in Neurobiology course, he/she has qualified in the Department and is ready to move on to prepare for admission to candidacy for the Ph.D.

  d) The remainder of the schedule during the second year will be composed of non-dissertation research and taking required Neurobiology courses when necessary. Second year students will also attend all Neurobiology Department seminars and participate in a journal club beginning in the second semester.

- **Course Requirements**

All Neurobiology students must successfully complete (with a grade of B or better) the Cellular and Molecular Neuroscience Course (NBL 751) and one course in Integrative/Systems Neuroscience (choosing from NBL 710/NEUR 710, NBL 711 or NBL 712 listed on page 18). For students admitted directly into the Neurobiology Department or entering through the Neuroscience program, this requirement will be completed in the first year curriculum. Students entering from the CMB program who do not take these courses as part of their first year should complete the NBL 751 requirement in the second year and the Integrative/Systems Neuroscience requirement in the second or third year.

At least one advanced course must be taken during the Spring of the second year or during the third year. Students must consult with their mentor to determine which courses are appropriate. This course is selected from advanced Neurobiology courses or CMB modules, such as Developmental Neuroscience, Advanced Signaling, Diseases of the Nervous System, Synaptic Signaling, Stem Cell Biology, Biophysics of Membrane Excitability, or Mind and Brain. Other Departments offer CMB modules and advanced courses which may be relevant, that can be taken as the advanced course. M.D./Ph.D. students will have fulfilled this requirement during the first two years.

Students are expected to be active participants in a Neurobiology Journal Club and the Departmental Seminar Series until completion of the degree. Journal Club participation begins in the spring of the second year. Students admitted directly into Neurobiology attend the Seminar Series beginning in the first year. Students entering via other programs attend the Seminar Series beginning the year they enter the Neurobiology Program.

All students are required to complete an approved ethics course such as Principles of Scientific Integrity (GRD717) and an approved course in statistics, such as Biostatistics (BST 601). Students usually complete these requirements in the third year.

- **Graduate Committee**

The graduate dissertation committee must include the mentor and at least four other graduate faculty members. The graduate school requires that three of the five committee members must have their primary appointment in Neurobiology and that two committee members must have their primary faculty appointment outside of Neurobiology. One of the members from outside the Neurobiology Department may be from another University. After individual committee members are consulted, their names, departmental affiliation, and a tentative dissertation title are sent to the Neurobiology Graduate Program Director who will submit this to the Dean of the Graduate School. The mentor, Neurobiology Graduate Program Director, and Dean of the Graduate School must approve the dissertation committee. The graduate dissertation committee is formed by May 31st of the second year.

- **First Committee Meeting**

In the first committee meeting the student will deliver a ten to fifteen minute oral presentation in which the general area of research, the overall hypothesis they wish to address, a few preliminary studies, and overall experimental approach for the student's project are briefly outlined. The purpose of this meeting is for the student to present a general overview of the dissertation topic and obtain guidance from the committee for developing the

dissertation proposal. The complete proposal does not need to be developed or presented at this meeting. The student will also provide an official transcript from the graduate school (including a listing of courses currently in progress) and satisfaction of graduate Neurobiology course requirements will be discussed. A chairman of the dissertation committee, other than the student's mentor, is designated at this meeting. Students must have their first committee meeting by October 31st of the third year.

- **Dissertation Proposal**

a) Prior to admission to candidacy for the Ph.D. degree in Neurobiology, a formal written proposal of the student's dissertation project must be submitted to and approved by the graduate dissertation committee. The written proposal must be submitted to the committee at least 10 days before the scheduled meeting. The dissertation proposal is similar in organization to an NIH NRSA grant application found at http://grants2.nih.gov/grants/funding/416/phs416.htm. The proposal should contain: (i) a one page statement of the Specific Aims that states the purpose of the research proposal and the hypotheses to be tested; (ii) two-three pages of Background and Significance (with appropriate referencing with citations) directly related to the thesis proposal and outlined experiments. The importance of the research described should be stated concisely by relating the specific aims to broad, long-term objectives; (iii) two-three pages of Preliminary Data demonstrating the feasibility of the proposal; (iv) three-five pages describing the Experimental Design and Methods. The Experimental Design section should be separated into individual Aims that include a clearly formulated statement of the Aim, the rationale and strategy for the experiments, and the experiments to be performed. Expected outcomes should be discussed as well as what will be done if the experiments do not work. Statistical procedures by which the data will be analyzed should be included. The dissertation proposal is limited to ten pages (single-spaced, font size minimum of 11 point, with margins of at least one half inch on all sides). The proposal should be supported by a bibliography that uses citation of specific original research papers, not just review articles. The bibliography is not included in the ten-page limit.

b) To provide an open forum for discussion of the dissertation proposal with the committee, each proposal will be given in a thirty-minute oral presentation (with supporting visual such as slides, a computer presentation or acetate based image projection), after which the committee will engage the student in a discussion of the merits and shortcomings of the proposal. The dissertation committee chairman will act as moderator of the discussion.

c) For acceptance of the dissertation proposal by the committee, the student will have described a significant and original scientific problem, formulated a testable hypothesis, written a clear and concise experimental design that addresses the problem, discussed her/his ideas orally in an effective manner before the committee, and shown comprehension of the problem in a broad and critical context. The committee may decide that the proposal is acceptable, that further refinement of the proposal is required, or that it is unacceptable.

The dissertation proposal must be submitted by May 31st and approved by August 15th by the end of the third year.

- **Requirements for Admission to Candidacy**

Admission to candidacy for the Ph.D. degree in Neurobiology requires grades of B or better, or Pass where applicable, in all mandatory courses, with an overall B (3.0) average in all graduate courses, successful completion of both Topics in Neurobiology Sections (all six modules), satisfactory completion of at least 20 hours of non-dissertation research, and approval of the dissertation proposal by the student's graduate dissertation committee.

- **After Entering Candidacy**

a) Once the student has been admitted to candidacy, he/she will register for and perform dissertation research until the completion of the Ph.D. The graduate school requires that students must complete at least two semesters of dissertation research after being admitted to candidacy to be eligible for graduation. In addition, a student must meet with the dissertation committee at least once after the proposal has been accepted and before the dissertation defense. The summer semester is considered a semester for this requirement.

b) After admission to candidacy, students must meet at least once a year with their graduate dissertation committee. The purpose of these meetings is to keep committee members current on the progress of the research. The committee members, in conjunction with the mentor, will determine when the student is ready to graduate.

c) Before graduation, students are required to present their data in the Neurobiology Seminar Series, and to participate in a teaching practicum. The teaching practicum can take the form of a didactic lecture, helping to direct a journal club, or assisting in a lab course or discussion group.

d) It is expected that most students will complete the program in four to five years. However, in extenuating circumstances, a time limit of up to seven years (including the first year of required core coursework and lab rotations) is allowed for completion of the degree of Ph.D. in the Department of Neurobiology. An extension beyond five years for completion of the Ph.D. requires approval of the mentor, the graduate committee, and the Neurobiology Graduate Program Director. After year five, the requirement for committee meetings increases to two per year.

- **Final Dissertation**

Once a final version of the dissertation has been completed, copies should be distributed to all committee members at least two weeks prior to the public defense. The public defense is scheduled by the student and requires that an announcement of the defense be submitted to the Neurobiology office at least 21 days before the defense so that it can be published in the UAB Reporter and posted across the campus. At that meeting, the dissertation will be defended by the student in an oral presentation followed immediately by an evaluation and defense with the dissertation committee. The dissertation committee chairman will act as the mediator for the dissertation defense. The mentor does not participate in the evaluation. A formal letter confirming the successful defense and copied to the Neurobiology Graduate Program Director must be signed by all committee members. One copy is retained by the student. The Graduate School must be notified at least ten days prior to the public defense.

The corrected version of the dissertation, after implementation of changes that are requested by the dissertation committee and formatting of the thesis according to Graduate

School guidelines, must be turned into the Graduate School and to the Departmental office before the student leaves UAB.

- **Additional Specific Guidelines**

Guidelines for the dissertation and graduation requirements are available from the Graduate School.

- **Registration**

Students should register for a total of 15 hours for the Fall and Spring terms and 10 hours for the Summer term. Memos regarding registration are sent to each student each term approximately three-four weeks prior to the final day of registration. It is imperative that students register for classes on time. If a student knows that he will be away during the class registration period, the Graduate Program Director must be contacted prior to leaving so that appropriate arrangements can be made. Late registration requires the signature of the advisor and the instructor of the class and cannot be done over the phone. If students do not register on time, FICA taxes will be deducted from their paycheck for the entire term.

GRADUATE CURRICULUM IN NEUROBIOLOGY

First year for students entering directly into the Neurobiology Department

CMB 700	CMB 1: Biomolecules
CMB 701	CMB 2: Genes
CMB 702	CMB 3: Cells
CMB 703	CMB Module 1: Cell Signaling
CMB 704/NBL 751/ NEUR 702	CMB Module 2: Cellular & Molecular Neuroscience
CMB 705	CMB Module 3: Developmental Neuroscience; Eukaryotic Genetics; Immunology; Molecular Basis of Disease
CMB 706/NEUR 710	CMB Module 4: From Molecules to Behavior **or**
NBL 712	Graduate Medical Neuroscience
NBL 781	Neurobiology Journal Club
NBL 703	Neurobiology Seminar Series

First year for students entering through the CMB program

CMB 700	CMB 1: Biomolecules
CMB 701	CMB 2: Genes
CMB 702	CMB 3: Cells
CMB 703	CMB Module 1: Cell Signaling; Bacterial Genetics & Physiology; Structural Biology & Enzymology
CMB 704	CMB Module 2: Cellular & Molecular Neuroscience; Development; Virology
CMB 705	CMB Module 3: Developmental Neuroscience; Eukaryotic Genetics; Immunology; Molecular Basis of Disease
CMB 706	CMB Module 4: From Molecules to Behavior; Advanced Signaling; ABC Transporters; Diseases of the Nervous System; Synaptic Signaling; Protein Folding Diseases; Stem Cell Biology; Lymphocyte Biology
CMB 712	Methods and Logic

First year for students entering through the Neuroscience program

CMB 700	CMB 1: Biomolecules
CMB 701	CMB 2: Genes
CMB 702	CMB 3: Cells
CMB 703	CMB Module 1: Cell Signaling
CMB 704/NBL 751/ NEUR 702	CMB Module 2: Cellular & Molecular Neuroscience
CMB 705/NEUR 720/ NBL 752	CMB Module 3: Developmental Neuroscience
CMB 706/NEUR 710	CMB Module 4: From Molecules to Behavior
NEUR 780-781	Neuroscience Journal Club

First and second years for students entering through the M.D./Ph.D. program

Gross Anatomy
Intro to Medicine - Ethics
Intro to Medicine - History
Intro to Clinical Medicine
Behavioral Science/Human Sexuality
Physiology
Medical Neurosciences NBL 711
Nutrition
Pharmacology I

CMB 700	CMB 1 Biomolecules
CMB 701	CMB 2 Genes
CMB 702	CMB 3 Cells
CMB 704	CMB Module 1: Cellular & Molecular Neuroscience; Development; Virology
CMB 705	CMB Module 2: Developmental Neuroscience; Eukaryotic Genetics; Immunology; Molecular Basis of Disease

- ***First Year-End of Second Semester: Appointment of Mentor***

First Year Summer

NBL 798	Non-dissertation Research

Second Year Fall

NBL 700	Topics in Neurobiology
NBL 798	Non-dissertation Research
NBL 703	Neurobiology Seminar Series

Second Year Spring

NBL 701	Topics in Neurobiology
NBL 798	Non-dissertation Research
NBL 703	Neurobiology Seminar Series
NBL 781	Neurobiology Journal Club*****
	Advanced course

*****Neurobiology Journal Club Selection (NBL 780-781)
Basic Neurobiology Journal Club; Ion Channel Journal Club; Plasticity of the Forebrain-Molecular, Cellular and Physiological Mechanisms; The Molecular Basis of Signaling in the Nervous System; Selected Topics in Neurodegenerative Diseases

- ***Appointment of Dissertation Committee by May 31st of Second Year***

Second Year Summer

NBL 798	Non-dissertation Research

Third Year Fall

NBL 798	Non-dissertation Research
NBL 780	Neurobiology Journal Club
NBL 703	Neurobiology Seminar Series
GRD 717	Principles of Scientific Integrity

- ***First Dissertation Committee Meeting by October 31st of Third Year***

Third Year Spring

NBL 798	Dissertation Research
NBL 781	Neurobiology Journal Club
NBL 703	Neurobiology Seminar Series

- ***Dissertation Proposal Presentation by May 31 of Third Year***

Third Year Summer

NBL 799	Dissertation Research

- ***Dissertation Proposal Accepted by August 20 of Third Year***

Fourth Year Fall

NBL 799	Dissertation Research
NBL 780	Neurobiology Journal Club
NBL 703	Neurobiology Seminar Series
	Teaching Practicum

Fourth Year Spring

NBL 799	Dissertation Research
NBL 781	Neurobiology Journal Club
NBL 703	Neurobiology Seminar Series

Fourth Year Summer

NBL 799	Dissertation Research

Fifth Year Fall

NBL 799	Dissertation Research
NBL 780	Neurobiology Journal Club
NBL 703	Neurobiology Seminar Series

Fifth Year Spring

NBL 799	Dissertation Research
NBL 781	Neurobiology Journal Club
NBL 703	Neurobiology Seminar Series

Fifth Year Summer

NBL 799	Dissertation Research

Advanced Courses and CMB Modules Offered by the Neurobiology Department

Cell Signaling, CMB 703
From Molecules to Behavior, NBL 710/Neur 710
Medical Neuroscience, NBL 711
Graduate Medical Neuroscience, NBL 712
Cellular and Molecular Neuroscience, NBL 751
Developmental Neuroscience, NBL 752
Biophysics of Membrane Excitability, NBL 720
Advanced Signaling, NBL 729
Mind and Brain, NBL 755
Diseases of the Nervous System, NBL 730
Synaptic Transmission, NBL 758

2003-2004 Academic Calendar

Fall Semester 2003	
Early Assigned Time Registration	Apr 14-18
Early Open Registration	Apr 21 - May 30
Early Phone/Web Registration	Apr 14 - May 30
Assigned Time Registration	July 28 - Aug 1
Open Registration	Aug 4-19
Phone/Web Registration	July 28 - Aug 19
Classes Begin	Aug. 20
Registration After Classes Begin	Aug 20-28
Financial Aid Disbursement	Aug 22
Last Day to Drop w/o Paying Tuition and Fees	Aug 27
Last Day to Add a Class	Aug 28
1st Payment Deadline	Aug 29
Labor Day Holiday	Sep 1
Final Payment Deadline	Oct 1
Last Day to Withdraw with a "W" (Undergraduates)	Oct 21
No Classes for Students	November 26

Thanksgiving Holidays	Nov. 27 - Nov. 30
Classes End	Dec 5
Last Day to Withdraw (Graduates)	Dec 5
Final Exams	Dec 6 - 12
Commencement Ceremony	Dec 13
Grades Available on ACCESS	Dec 17

Spring Semester 2004	
Assigned Time Registration	Nov 10 - 14
Phone/Web Registration	Nov 10 - Jan 5
Open Registration	Nov 17 - Jan 5
Classes Begin	Jan 6
Registration After Classes Begin	Jan 6 - 14
Financial Aid Disbursement	Jan 8
Last Day to Drop w/o Paying Tuition and Fees	Jan 13
Last Day to Add a Class	Jan 14
1st Payment Deadline	Jan 15
Martin Luther King Holiday	Jan 19
Final Payment Deadline	Feb 17
Last Day to Withdraw with a "W" (Undergraduates)	Mar 9
Spring Break	Mar 21 - 27
Last Day to Withdraw with a "W" (Graduates)	Apr 26
Classes End	Apr 26
Open Days	Apr 27 & 28
Final Exams	Apr 29 - May 5
Commencement Ceremony	May 8
Grades Available on ACCESS	May 9

Summer 12-Week Session 2004	
Assigned Time Registration	Apr 12-16
Phone/Web Registration	Apr 12 - May 7
Open Registration	Apr 19 - May 7
Classes Begin	May 10
Registration After Classes Begin	May 10 - 18
Financial Aid Disbursement	May 12
Last Day to Drop w/o Paying Tuition and Fees	May 17
Last Day to Add a Class	May 18
1st Payment Deadline	May 19
Memorial Day Holiday	May 31

Final Payment Deadline	June 11
Last Day to Withdraw with a "W" (Undergraduates)	June 21
Independence Day Holiday	July 5
Last Day to Withdraw with a "W" (Graduates)	Aug 4
Classes End	Aug 4
Final Exams	Aug 5 - 11
Grades Available on ACCESS	Aug 15

NEW GRADUATE STUDENT INFORMATION

Appointment

Cindy Urthaler, the Neurobiology Graduate Program Coordinator, will appoint you as a graduate student at UAB. Please make arrangements to meet with her upon your arrival to UAB (for direct admits) or upon transferring to Neurobiology (from other departments or programs). A valid driver's license and social security card are required to complete your appointment papers.

Contact: **Cindy Urthaler, Department of Neurobiology**
Location: **Civitan International Research Center, Room 137**
1719 6th Ave. S., Birmingham, AL 35294-0021
Telephone: **(205) 934-1550**
Fax: **(205) 975-6330**

Foreign Nationals

After meeting with Cindy Urthaler, you should visit the Center for International Programs at UAB. Please provide your temporary social security number, which can be obtained from the Program Administrator a valid passport, visa and I-94 form to Cindy Urthaler. You should apply for a permanent social security number as soon as possible. A copy of your permanent number should be presented to Cindy Urthaler when received from the Social Security Administration.

Contact: **Cindy Urthaler, Department of Neurobiology**
Location: **Civitan International Research Center, Room 137**
1719 6th Ave. S., Birmingham, AL 35294-0021
Telephone: **(205) 934-1550**
Fax: **(205) 975-6330**

Contact: **Lisa Scott, Center for International Programs**
Location: **Hill University Center, Room 318**
1400 University Boulevard
Telephone: **205-934-3328**

Orientation

UAB provides orientation for all new students at the beginning of each Fall Semester. You will be notified by campus mail as to the date and time. It is imperative that you attend this orientation.

Health Insurance

Students are required to have health insurance. You must go to the UAB Health Office and complete health insurance enrollment forms. If you currently have insurance, you must take verification of that policy to the Student Health Office for exemption from UAB health insurance.

Contact: **Becky Hallman**
Location: **Community Health Services Building, Room 301**
933 South 19th Street
Telephone: **205-975-7750**

Payroll

W-2 and A-4 income tax forms must be completed at the Payroll Department. Direct deposit slips can also be obtained at this office. Your paycheck will be processed after all tax forms, health insurance and personnel appointment papers have been submitted.

Contact: **Payroll Department**
Location: **Administration Building, Room 280**
701 South 20th Street
Telephone: **205-934-4523**

UNIVERSITY GRADUATE SCHOOL ADMINISTRATION

Dean	James B. McClintock	511 HUC	4-8227
Director of Graduate School Operations	Julie Bryant	511 HUC	4-8227
Coordinator, Recruitment and Retention	Wanda Jordan	511 HUC	4-2495

Graduate Admissions/Inquiries	Patty Parsley	511 HUC	4-8227
	Susan Noblitt	511 HUC	4-8227
Graduate Student Records	Patty Parsley	511 HUC	4-8227
	Susan Noblitt	511 HUC	4-8227
Records and Registration	Pamela Williams	207 HUC	4-8222

MISCELLANEOUS INFORMATION

Financial Aid: Graduate Assistantships

Because the pursuit of the Ph.D. degree is a full-time activity, all Neurobiology graduate students are supported by graduate assistantship stipends and do not have any mandatory teaching duties in the classroom or laboratory. Continuous registration on time and satisfactory academic standing during all terms is required. All students accepted into the program can expect to receive a stipend of $21,000/year plus payment of all tuition and fees. Students may not seek outside employment. Guidelines for graduate assistantships from the UAB graduate school are outlined on page 20.

Graduate Student Association (GSA)

UAB graduate students are represented by the Graduate Student Association (GSA), which works closely with the Graduate School and other offices of the university administration in formulating policy and meeting student needs. All graduate students are automatically members of the GSA, and the GSA Senate is composed of student representatives from all graduate programs. Interested students should contact any GSA officer is they would like to become a GSA Senator.

The GSA organization co-sponsors a variety of services and activities, including Graduate Student Orientation, Career Day, Honors Convocation and the GSA Fund.

The GSA office is located in Room 440C of the Hill University Center. Information on travel awards and interlibrary loans may be downloaded from the Web site or picked up in the Graduate School office, Room 511 of the Hill University Center (telephone 934-8227). The Graduate Student Association provides monetary travel awards for attending academic conferences, money for interlibrary loan requests, and $40 vouchers for thesis copying. In addition, the GSA acts as a sounding board for student issues such as: health insurance, parking, campus safety, and career services.

Lister Hill Library

Monday through Thursday 7:00 am - 11:00 pm
Friday 7:00 am - 7:00 pm
Saturday 9:30 am - 6:00 pm
Sunday 12:00 pm - 10:00 pm

Student Health

The Graduate Student Association and the Student Health Services (SHS) have compiled the following key information for the graduate/professional students who are covered under the SHS-provided medical center student insurance policy. This information is not meant to be comprehensive. Please consult the actual policy for details.

Neurobiology Website: http://www.neurobiology.uab.edu/

Services Provided:

Ambulatory Visits:

The Student Health office is open from 8:00 a.m. – 4:30 p.m. daily Monday through Friday, and students will be seen by appointment. Patients with disorders requiring emergency treatment will be seen promptly without an appointment.

> Acute illnesses other than emergencies will be seen without appointments 8:00 a.m. – 9:00 a.m. only. On evenings, weekends, and holidays, or any time Student Health is closed, students are authorized to report to the University Hospital Emergency Department for illness of an Emergency Nature. Students are not authorized to go to the Emergency Department when Student Health is OPEN, EXCEPT FOR SERIOUS EMERGENCIES.

Emergency within Birmingham...

Go to the UAB emergency room when possible or call 911.

Guidelines for Graduate Assistantships at the University of Alabama at Birmingham

Background

Programs of graduate study are designed to transform the individual from student to professional scholar or practitioner. Graduate assistantships are designed to provide intellectual guidance and financial support for promotion of the student's education. When a graduate assistantship is well conceived and executed, it serves as an ideal instrument to help facilitate the desired transformation. The primary goal of an assistantship is, then, to facilitate progress toward the graduate degree. The graduate assistant is a student functioning in an apprenticeship role which contributes to the student's own professional development.

As a student, the graduate assistant is expected to perform well academically to retain the assistantship. He or she is to be trained, counseled, and evaluated regularly by a graduate faculty mentor so as to develop professional skills in teaching and/or research. The graduate assistant is expected to meet specific obligations in these areas as outlined in the letter of appointment. The contribution made by the graduate assistant supports the teaching and/or research mission of the university. The responsibilities of the graduate assistant may be greater than those required of other students, but the opportunities for professional development are also greater. Any work obligations of the assistant are incident to the assistant's education.

Eligibility

To be eligible for an assistantship, a student should be admitted to a graduate program as a full-time, degree-seeking student. The assistant must be enrolled during the period of the assistantship. He or she should have achieved, and should continue to maintain, good standing. Students found to have engaged in academic or nonacademic misconduct are ineligible for appointment and will have their appointments terminated.

Appointment Procedures

Appointment of graduate assistants should be made and monitored by the Program Director, Department Chair, and the Dean of the School where the appointment is made. Because the terms of individual awards may vary from department to department, and even within a single department, it is the responsibility of the Program Director and/or Department Chair to make the offer of appointment in an official letter. In cases where the funding is being provided from an entity outside the Department (e.g., the Graduate School), the terms of the assistantship will be communicated to the Program Director so that these terms can be spelled out in the official letter of appointment. In the case of the Graduate School Assistantship, regular and direct communication should occur between the Program Director and the Graduate School Dean regarding the student's progress. When teaching is involved, the prospective assistant may be required to demonstrate proficiency in spoken and written English before appointment. Each graduate student who receives an assistantship must receive a letter of appointment, signed by the Program Director and/or Department Chair that clearly spell out the terms of the assistantship.

These terms should include, but not be limited to, the following issues:

- Title of appointment, time commitment, and length of appointment
- Conditions and timing for reappointment
- Stipend level and whether or not fees, health insurance, and tuition will be paid
- Course load, if teaching is involved
- Description of duties, if applicable
- Expectation regarding whether or not the assistant may take on employment
- Expectations regarding time commitments and responsibilities between terms
- Name and position of supervisor
- How the student assistant is to be evaluated
- Resources to be provided (e.g., equipment, supplies, office space, travel funds)
- Deadline for acceptance of the assistantship offer

Term of the Assistantship

Each assistantship should be made for a maximum period of one year. Assistantships generally begin with the academic calendar year. Reappointment is possible but the terms of reappointment are variable, determined by policies of the program.

Responsibilities of the Graduate Assistant

A fundamental responsibility of the graduate assistant is to work closely with the faculty supervisor in carrying out research or teaching activities, while at the same time making good progress toward the completion of the degree program. If the student's assistantship responsibilities and academic program are properly coordinated, these responsibilities will be compatible. The assistant should articulate his or her goals early in the term of appointment and work with the supervisor to achieve them. The graduate assistant is obligated at all times to maintain high ethical standards in academic and nonacademic activities, and to report violations of these to the faculty supervisor. The graduate assistant should keep well informed of departmental, school, and institutional regulations, and follow them consistently. If problems arise in the assistantship assignments, the graduate assistant should seek help first from the faculty supervisor. If problems cannot be resolved, the student should consult the Program Director.

In general, graduate assistants are expected to be available in the periods between academic terms. Graduate assistants are entitled to the following short-term leaves:

- a minimum of 15 calendar days (one-half month) paid leave of absence (vacation) per calendar year,
- 15 calendar days (one-half month) paid sick leave of absence per calendar year, and
- parental leave of absence (with pay) of 30 consecutive days per calendar year upon the birth or adoption of a child. Either or both parents are eligible for parental leave.

These leaves (vacation, sick, parental) do not accrue. All leaves require notification of and approval by the mentor or graduate program director and may be extended, if necessary, with the permission of the graduate program director. Program policies regarding leaves of absence must apply equitably to all full time students in good standing in the program. With the agreement of

the mentor and graduate program director, extended, unpaid, non-emergency absences from campus for periods up to a month may be approved. Extended absences (without pay) for non-academic purposes should be limited. Students should consult the Graduate School Policies and Procedures concerning leaves of absence. In emergencies, graduate assistants should inform their mentors or program directors as soon as possible about the need for a leave of absence.

Privileges

Graduate assistants should be assigned space and equipment sufficient to carry out their assignments effectively. Normally this would include a desk, chair, file space, a mailbox, and office and lab supplies, where needed. Where possible, graduate assistants should be provided secretarial assistance or computer access when they are preparing materials related to their assignments.

Evaluation

Goals should be worked out with the faculty mentor early in the academic year. Each graduate assistant should receive a formal evaluation from his or her faculty supervisor once each year. Excellence should be noted in an assistant's record, as should inadequacies in performance. Ongoing informal evaluation should precede more formal measures. The results of formal evaluations will be entered into the assistant's departmental record, including evidence that the student has reviewed the evaluation.

Reappointment

Priority for reappointment is determined by the graduate program but should be given to those graduate assistants making good progress toward completion of the degree and performing well in their assistantship duties. Criteria for reappointment should be announced in advance of reapplication and should generally include

- maintenance of good standing and satisfactory progress toward the degree
- assessment of performance during the annual review
- length of time on the assistantship
- length of time in the degree program

Prepared by the Advisory Committee to the Graduate Council. Questions concerning this document should be addressed to the Graduate School.