



FALL 2006

MEDICAL HISTOLOGY

GENERAL COURSE INFORMATION

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1. Course Goals

Your success in this course depends, in part, on your understanding what we are attempting to teach. Keep in mind the following five goals as you begin this course in Histology:

- *To learn the microscopic anatomy **and** function of the tissues and organs of the human body, using the lectures, syllabus, atlas, and text (Junqueira and Carneiro) as an indication of the detail we expect.*
- *To learn standard histological terms and concepts for the purpose of identification, precise communication, and critical reading of relevant medical literature.*
- *To develop a systematic logical thinking process as a means to correctly identify histological preparations.*
- *To understand the inseparable relationship between microscopic structure and function, and be able to apply that understanding.*
- *To understand the standard preparative procedures used in histology and how they affect the visual image of histological materials.*

Remember, we can *teach* these things,
but it is up to you to *learn* them.

Your goal should be not simply to *know*
facts, but to be able to *understand* and
apply those facts in a meaningful way.

2. Organization of this Syllabus

The lecture topics are numbered in the course schedule. These numbers correspond to the numbered lecture topics in this syllabus. Each topic in this syllabus is divided into the following five parts.

I. Reading. The pages are in the textbook, Junqueira and Carneiro, 11th edition (2005), and Wheater's Atlas, 5th edition (2006). Preview these pages before coming to laboratory and lecture so that you develop a broad overview of the nature of the material scheduled to be covered that day. Following lecture, use the textbook to develop a full understanding of the vocabulary and concepts presented in lecture.

II. Study Guide for Laboratory and Lecture. This section provides terms and concepts with which you should be *familiar* before attending lecture and laboratory, and that you should *fully understand* by the time you have completed your study of the topic. Examine the list of structures before coming to class because the terms are the working **vocabulary** of the day's topic. Discuss the terms, concepts, and principles with classmates as part of your study strategy.

This section contains **Learning Objectives** for the topic session. You should focus on these learning objectives in your study of each topic. Examination questions will attempt to assess whether you have learned what we expect you to learn as set forth in these Learning Objectives.

In short, this section summarizes what we expect you to know and understand.

III. Synopsis of Laboratory Exercise. This is a list of the microscope slides and EM plates you will examine in lab. In some sections, this synopsis is presented with a diagrammatic anatomical representation of the location and orientation of the specimens with reference to the system being examined.

IV. Laboratory Exercise. Our laboratory sessions precede the companion lecture topics. You are expected to attend all laboratories. These labs represent small group activities and they deal with learning objectives that you can't get from reading the syllabus or exploring electronic resources. Every lab begins with an overview presented by the faculty, and this presentation is part of the course.

We design our course time with lab preceding lecture because we expect you to come to lecture with a good visual impression of the structures we discuss in lecture. The alternative arrangement of lecture-before-lab necessitates that valuable lecture time be spent describing classic early 1900's histological images, leaving insufficient time to discuss what you should know in the 2000's!

Most laboratories can be completed in the allotted time, but some assignments may need additional time outside of lab. You are expected to complete all the labs in their entirety.

V. Lecture Guide. This section is provided to help you understand the material the lecturer presents in lecture. Most of these Lecture Guides have been prepared by the Lecturer *du jour*. These Lecture Guides tend to be a very distilled presentation of the topic and are **not** intended to replace your textbook. You are expected to consult the textbook for complete explanation of vocabulary and concepts presented in lecture and in the syllabus.

♥ **A word of advice:** Do not view the Lecture Guide as you might view a textbook. Typically, a textbook contains material for which the faculty choose not to hold you responsible at this time. However, *all* the material in the Syllabus Lecture Guide is material the lecturer believes you should know and understand, given your time and our curriculum. If the lecturer does not believe you should understand a term or concept now, he or she has not included it in the syllabus (and a tree has been saved!).

The PowerPoint presentations used by faculty in their lectures are posted on the Course CourseInfo website (see section 8 below).

The laboratory and lecture pages in this syllabus have been printed with wide outside margins to encourage you to take notes on these pages. With practice, your note taking will *supplement*—not *duplicate*—the material we present in this syllabus, and you can devote more of your energy to listening and observing.

3. A Strategy for Learning Histology

Our goal is to teach you classical and current histology so that you have a solid foundation for your physiology, pathology, IP, and Biology of Disease courses, in particular, and for the practice of evidence-based medicine in general. We want you to learn and understand this material so that it is accessible and retrievable not only for Part 1 of the USMLE (taken at the end of your second year of Medical School) but also for your career of life-long learning. Basically, you owe it to your future patients... you need to be able to read current literature and explain diagnoses and treatments to your patients.

During this course, we expect you to assimilate a vast new vocabulary and adopt the precision of its use; we expect you to integrate conceptual, factual and visual material; we expect you to hone your skills of professional scientific communication with your classmates and faculty; and we expect you to learn problem-solving strategies as they apply to the interpretation of microscope slides. That's a lot to learn! You can do it if you approach each topic of this course using the following four stages.

The key to success in this class is to *engage* with the material. You can't be a passive participant and just hope it all soaks in.
Learning is not a spectator sport!

Stage 1: Preparation. Before lab and lecture, take the time to develop a mental model of what will be presented. Familiarize yourself with the *vocabulary* and the *general nature* of the topic. Depending on what works for you, you can look over the syllabus materials, you can look over the illustrations in the text, and/or you can look over the atlas images. Permit yourself a few minutes of curiosity. Basically, set a mental stage for what is to follow.

This up-front effort on your part is one of the most important aspects of an efficient study strategy: you will get much more out of the discussions and lecture—you will catch many more of the subtle details—if you know what the lecturer is talking about when you hear the lecture.

Be Forewarned! All the lecturers in this course assume you have prepared for the lecture, read the syllabus, and you *already know something about the topic they are presenting.*

Stage 2: Laboratory. The laboratory is when you learn the “visual vocabulary” of the topic. You learn the *names* and *morphological features* of cells and their typical locations and relationships with other cells. You learn to recognize structures in slides and understand the relationship between 3-dimensional

(actually, 4-dimensional) structures and their 2-dimensional images. Each laboratory session begins with a topic overview presented by your lab instructor, usually the “big picture” that provides context for all the details.

The lab constitutes a small group experience and should provide a time of communication, coaching, modeling, correcting, and reinforcement. It is hoped this is a time of stimulation and inspiration as you interact with your lab instructor and classmates. Use the vocabulary and “talk histology.” Take advantage of this time and use it wisely.

Stage 3: Lecture. This stage addresses the topic material in a functional context. You use the visual images and vocabulary you learned in lab to understand the functional, and some clinical, relevance of what you saw.

The lecture is the source of most of the *learned expectations* you are expected to bring to slide material, and later, to clinical practice. If you can understand *how* all the morphological components interact to carry out some complex function, like digestion or oxygenating blood, then you will be able to reason through what you see — whether it is a microscope slide or a clinical symptom. Being able to identify histological material (or diagnosing illness) is not about memorizing images (or slides or symptoms), it is about being able to go through a deductive reasoning process to figure out what you are looking at.

Remember that learning histology well is an intellectual process that involves *art* as well as *science*. The art lies in knowing which questions to ask, and in which order, in your systematic process of elimination, or differential diagnosis. Expect to learn both the art and the science in this histology course.

Stage 4: Processing. This stage is *critically important to retention and retrieval*, and often skipped by students when they begin medical school studies. It should follow the preceding stages within 24 hours, while the lecture and lab material are still fresh in your mind ...while the information remains in your short-term memory. In stages 1 through 3, you have had lots of information heaped upon you, and you need to mentally process that information before you forget it. Put it all together.

- **talk* about it
- **write* about it
- **relate* it to past and present material
- **apply* it to your daily life

Your goal in this stage is to transfer a huge collection of individual facts into the realm of *understanding*. Basically, link those facts together in your own mind, so they don’t drift away. Reconstruct the logic the lecturer presented, before you forget. Be able to tell the story of how the cells, tissues, and organs

perform, using the vocabulary of histology as the vocabulary of the story. By moving all these facts and definitions into the realm of understanding, you will be better able to retrieve them when you need them in the future (and we mean *way* beyond the examinations, here!).

It is best to do this activity with one or more fellow students—also fresh from lecture and lab—and discuss what you just learned. Form a **STUDY TEAM**. You are learning a new language — you need to *use* the words! Reconcile your lecture notes with your classmate’s notes. Relate them to what you viewed in lab. Go back and look at, and discuss, the chalkboard diagrams that were prepared for the lab. In short, *think* about the material.

By working with a classmate, you will give and provide feedback to correct any misconceptions that either of you may have acquired; you can identify and fill any gaps in your understanding, and you will get used to using the proper vocabulary correctly. Don’t wait until you have “learned” this material to study with your classmates!

A word to the wise:
You are expected to understand this material and apply it *out of the context* (i.e., the syllabus) in which we present it. So, each time you revisit the body of knowledge on each topic, approach it in a different way. Do not get trapped into memorizing facts and images only as they appear within the syllabus and lab slides that are presented to you.

4. Student Conduct Expectations

It is important for each student to respect the other students in the class. Every student in the class has the *right* to learn the material in this course, and every student has the *responsibility* not to deprive others of their right to learn. To that end, we ask that you observe the following aspects of **professionalism**.

- a) Arrive at all scheduled lectures and labs on time. *Arriving late* or *leaving early* can be very disruptive not only to your classmates but also to the person who is lecturing. If you must leave lecture early, take a seat near the classroom door so that you can leave with minimal distraction.

- b) Do not use class time for viewing your email or websites or other material that is unrelated to the lecture or lab. Such activity is distracting to the people seated around you.
- c) Do not speak unnecessarily with your classmates during *lecture*; such chatter is very distracting to people seated around you, as well as to the lecturer. Do not use *lab* time for extended conversations about matters unrelated to lab. This is also very distracting to your classmates.
- d) Be sure your cell phone is turned off during the lecture and lab sessions.
- e) There is no formal policy regarding attendance at lecture and lab. However, it is doubtful that you will do well if you miss too many labs or lectures.

5. Microscopes

You will need your microscope for the laboratories and the examinations. Your microscope must have a range of dry, bright-field objectives and an oil immersion objective capable of delivering about 1000X final magnification. It must also have a pointer in one of the eyepieces. The School of Medicine (for medical students) and the Division of Graduate Medical Sciences (for graduate students) have a number of high quality microscopes available for rental.

Handle your microscope with care. Read Appendix 1 regarding the proper care and use of your microscope. Microscopes are precision instruments and careless knocking about can easily result in misalignment of the optics and other serious damage. Report suspected microscope problems to us so we can arrange for repair, if necessary, before the problem worsens. If you need a new bulb or fuse, and there is not a replacement in your microscope case, go to Dr. Vaughan or the source of your microscope to get a replacement.

One of the most frequent problems reported with the microscopes can be attributed to **dirty objective lenses**: symptom—you can't get a clear image with your 40x objective, but your other objectives are fine. *Do not ask for a replacement microscope just because your lenses need cleaning!* Ammonia-free glass cleaner and lens paper are available in the laboratories so that you can keep your lenses perfectly clean. Be very, very careful to keep immersion oil away from all but your 100x objective.

6. Microscope Slide Collections

The class microscope slides are contained in a two-box set that you will receive at the beginning of class. The set contains about 130 slides and represents many people-years' work in producing the slides. Loss and/or breakage of slides produce hardship for everyone, especially future classes of students, since we may not be able to replace broken or lost slides. Treat these collections with extreme care. Always open slide boxes over a counter and always check that the top side of the box faces up.

The slides in each loan collection are, as you might expect, not exactly alike. The slide you are directed to examine may be different in your set from that of your lab neighbors' set. In some cases, different tissue blocks have been used in the preparation of the slide; in other cases, the section simply comes from a different part of the tissue block. Remember that within a given organ, such as kidney or liver, each slide (section) will represent only a small sample of the whole. You are encouraged, therefore, to examine your neighbors' slides. In this way you can observe some of the variations that occur from section to section, or from tissue block to tissue block.

The complete list of the slides contained in the two boxes is in **Appendix 4**. If you discover that a slide is missing, inform Dr. Vaughan or staff in the Department of Anatomy and Neurobiology (L-1004) and we *may* be able to provide it. However, there are some shortages and you will simply have to examine slides from your classmates if yours is missing.

There is a charge of twelve dollars (\$12) for each broken or lost slide. Sometimes accidents do happen, and in many cases we can replace a damaged slide without cost. Loss of an entire collection is a serious problem and you will be charged \$1,500.00 if you do not return your slide collection.

7. Textbooks

One of the following Atlases is required. Bring it to lab.

- a. **Young and Heath: Wheater's Functional Histology, fifth edition (2006)**. This atlas has been a favorite of students and faculty for several years. The atlas pages noted in the Reading are from the Wheater's Atlas, 2006. The 2000 edition is fine to use if you have it.

- b. You may prefer to use **Gartner and Hiatt: Color Atlas of Histology, fourth edition (2006)**, which also has its dedicated followers. This Atlas is perfectly acceptable. Many students prefer the G&H atlas to Wheater's. It makes no difference to us which atlas you use.
- c. You may prefer to bring a laptop with the CD-ROM from **Vaughan: A Learning System in Histology: CD-ROM and Guide (2002)**. If this is your choice, you must have access to a text or atlas for expanded explanation of the material. The images on this CD-ROM are on the BU Intranet site <http://www.bu.edu/histology>. If your computer has the most recent version of Java, the links may not work.

Access to the following textbook *is required*:

Junqueira and Carneiro: Basic Histology: Text and Atlas (11th edition) 2005.
 ➤Note: This text is available as an e-book through the BUSM Alumni Library, or directly at <http://www.accessmedicine.com/resourceTOC.aspx?resourceID=15>. Page references to this textbook are included in the syllabus. Bookmark it in your browser.

Use this text for reference and to develop complete understanding of material presented in lecture. It serves as the “official” indication of the level of detail we expect you to know and understand. Because the syllabus is not meant to be complete, we believe you will need to use a textbook.

8. CourseInfo and automated e-mail.

We post a variety of course-related material on our CourseInfo web site: PowerPoint presentations used in class, full color images of some of the illustrations in this syllabus, sample exam questions from the 2003 fall histology written exams grouped by topic (so that you can use the question sets as a guide for the type of questions we ask), the complete fall 2002 through 2000 examinations, and grades. You will need to have the **PowerPoint application** and **Adobe Reader** to be able to use most of the posted files. If you don't have these, you can use the BUSM Alumni library's computers to view the material.

To access the CourseInfo site, go to <http://courseinfo.bu.edu/>. Find the course under summer courses, or simply use the Search option on the CourseInfo home page and type in “AN700”

which is the course number. You will be prompted to provide your BU login name and your Kerberos password. When the next page opens, select “Fall 2006 Medical Histology;” when you do that, the home page of our CourseInfo site will open.

We use your **BU e-mail** account during the course to inform you of important course or examination issues, of schedules and schedule changes, to alert you to typographical errors in the syllabus, to reply to questions that may be of interest to more than just the person who submitted the question, to dispel rumors, to provide details of grading decisions ...whatever. *You are expected to read the e-mail posted for this course...* on our part, we will keep the postings to a minimum.

If you choose to forward your BU email to a commercial account, be sure your mailbox does not become too full to accept our mail.

You are encouraged to use email to send messages, questions, comments, and concerns to Dr. Vaughan and the other faculty, if you so desire. Face-to-face is, of course, encouraged too. We ask that before you send questions about the material, you seek the answers in your textbook first (it's good practice!).

9. CD-ROM of our microscope slides

A Learning System in Histology: CD-ROM and Guide, by D.W. Vaughan, (Oxford University Press, 2002) is available for those who want to preview and review the laboratory material. The CD-ROM is an interactive database of labeled and unlabelled images, linked in nested series of increasing magnification. The images are derived from microscope slides in our own slide collection that you view in lab. The interactive database was designed and produced in collaboration with Mr. Lars Hansen, a BUSM '03 medical student.

This database of images is available on the BU server (<http://www.bu.edu/histology>). Be aware that the material is copyright protected. If your computer has the most recent version of Java, the links may not work.

10. Other Study Resources

The following resources are also available.

- a) **Double-headed microscopes.** These are located in the fourth floor base labs and may be used 24/7 at any time the rooms are not in use. Notices posted on the lab doors indicate daily scheduled use. These microscopes provide an excellent means to work collaboratively with your classmates or tutor.
- b) **Weekly laboratory reviews** with projected images of the class histology slides are held for those students who want to see and hear about the preceding week's laboratory material again. The informal reviews are *optional* and aimed at the student who needs help to stay in the "Pass" range. No new material is presented at these reviews, and they are not designed for the student who already feels secure and confident about the labs. These review sessions will be held on Monday evenings, 5:15 to about 6:30, in L-110. A schedule will be posted on the CourseInfo site, under Course Information.
- c) **"Histology: What You Learn and How to Learn It"** This presentation will take place during the first Monday's Lab Review time slot, September 18th. This PPT is basically an explanation of what we expect you to learn in this course, and some strategies for doing so successfully. Last year we did this after the class was underway and the students who found it useful reported that they would have liked to have had it earlier in the course. Later in the course, before the first exam, we will also have an optional session looking at our USMLE-type MCQ exams and how we expect you to approach the questions.
- d) **Video Microscope Sessions.** The purpose is to model appropriate microscope technique, and the sessions are designed for all students who are not familiar with how to properly examine a microscope slide. For such students, these sessions will be especially important at the beginning of the course. We will set up a video microscope and LCD projector and go over some of the laboratory slides, talking through the process of examination and thinking. These sessions are intended to be interactive. These sessions will probably be held on Saturday mornings, and will continue as long as there is the need.
- e) A library of links to Internet medical educational materials can be found at: (<http://www.medicalstudent.com>). Look under the histology heading. This is a good site for locating links to other medical course material too. Other useful sites are included on the

CourseInfo site, on the External Links page. Note especially the University of Iowa virtual microscope slides.

11. Tutors

Students who feel they need personalized help can arrange for a **tutor**. Tutors are graduate students or classmates who have successfully completed the histology course. Some of our TAs serve as tutors.

To arrange for a tutor who will be paid by the school, you must first contact Dr. Vaughan to complete a Tutoring Permission form. Don't be embarrassed (or surprised) to admit that you need a tutor—lots and lots of our students need a bit of help from a tutor to get started and thereafter they are just fine! MED students take this permission form to Ms. Verna Lacey, the Learning Specialist who works out of the OSA (Office of Student Affairs), for an additional signature. GMS students do not need to go to Ms. Lacey. Finally, this form is delivered to our Course Tutor Coordinator, **yet to be identified**. When you contact the tutor coordinator, he or she will give your name to a person who has been approved to be a tutor, and that person should contact you within 24 hours to arrange a meeting time.

Tutors are available without cost to all students (MED and GMS) whose grades (after the first exam) indicate they can use some help. We'll tell you what the cut-off point is. Such students who qualify for tutoring can receive up to two hours of help in Histology a week (2 hours/week/course).

For medical students who feel they can use the help of a tutor earlier in the course, like after the first week or so of class, the Office of Student Affairs will cover the cost of tutoring (2 hrs/week/course). Such students are strongly encouraged to see Dr. Vaughan about getting help from a tutor *before* the first exam. Do not hesitate to ask ...the time to get help is before you become *really* clueless and unable to recover.

Students who don't qualify for free tutoring may contact our Tutor Coordinator to get names of students who have been approved to tutor, and make arrangements for fee-for-service tutoring. Such independent contractors may charge \$15 to \$20 per hour.

✓A word of advice: Do not wait until the last minute to find a tutor because the people willing to tutor may become "overbooked" and unable to schedule time for you.

12. Examinations

Each of the three sets of examinations in this course has two parts: a written part and a practical part. These two parts are weighted equally in all the exams. The first two sets of exams cover material presented in only that third of the course. *The third examination covers material presented in the final two sections of the course, with greater emphasis on the material of the third section.*

The **written exams** (~50 questions) are comprised mostly of MCQ (multiple-choice questions). As a guide to the questions we typically ask, you can examine samples of past years' fall examinations that are on the CourseInfo web site.

The **practical laboratory examinations** consist of microscope slides and photographs of microscope slides and/or electron micrographs, for a total of 25 questions per practical exam. For the practical exam, you use your own microscope, and numbered and marked slides and photographs are passed sequentially from student to student in a continuous loop around the laboratory. On the exam page you will be given, you are asked to identify, or give the function of, the cell, tissue, or organ indicated.

We provide a *practice* practical exam prior to the first and second exams.

Both written and practical exam questions can come from lecture material, laboratory material, and assigned reading. You are responsible for everything covered in lab and lecture as well as material designated as Self-Study.

13. Grades and Grade Policies

The three sections of the course are weighted 25%, 30% and 45% respectively.

Course grades are assigned at the *completion* of the course—there are *no interim grades assigned*, although we do post distribution histograms after the exams so that you can assess your performance relative to the class as a whole.

For medical and MD/PhD students: course grades are Pass (**P**), Marginal Pass (**MP**), and Fail (**F**). The Marginal Pass grade indicates performance at a level only slightly above the minimum standards determined by the faculty. Consult your BUSM "Evaluation, Grading, and Promotion Policy" for discussion of this grade and its significance to your promotion.

A **Supplemental Student Evaluation** will be prepared for all Medical and MD/PhD students, and forwarded to the registrar for inclusion in each student's Academic Record. This form is for evaluation of each student's more qualitative professional development and provides information that may be included in your "Medical Student Performance Evaluation" Letter (formally known as the Dean's Letter) that is part of your Residency application. A copy of this Supplemental Student Evaluation Form is included at the end of this section. Your Laboratory Instructor will likely be the person who prepares this form. You are encouraged to meet with your Laboratory Instructor several times during the term, outside of lab, so that he or she can get to know you.

For students in the Masters of Medical Science program and other graduate students: grades in this course are standard letter grades and they are assigned at the completion of the full course. The following grade equivalencies will hold.

P = A, A- , B+ or B

MP = B-

F = C or lower

A grade of B or better is necessary to gain Advanced Standing in the fall 2005 and 2006 BU School of Medicine course in Histology.

Final course grades are **not** based on the statistical analysis of your class (i.e., class mean and standard deviations). Your final grade reflects only *your* work and you are not competing with your classmates for your grade.

As a rough guide, the A and A- grade will probably include all final percentages above 83% (*give or take* a percentage point); the B+ and B grades will probably fall between 70% (*give or take* a percentage point or two) and the A grades; a final percentage below 62% will likely be a C grade. D and F grades will usually be assigned to students whose final course grades fall below 50% and 40%, respectively.

Please bear in mind that your final grade in this course will be based on your *performance*, not your *potential*.

Your performance on the FINAL EXAM must surpass a percentage of 60% on both the final Written and the final Practical exams in order to earn a B grade or better. (Note that this does NOT state that *if* you get a 60% on both exams you *will* receive a B grade. Nor does it refer to any exams other than the final exam.)

The following are additional Histology course policies.

All students:

- If you are unable to take an examination because of illness or family crisis, you will need to notify Dr. Vaughan *before* the exam, and later provide a written statement that explains the reason for your inability to take the examination. Medical Students should also notify the OSA, if possible, so that Dr. Carr is aware of your circumstance. In the case of a medical excuse, a physician's letter may be required.
- Failure to show up for an examination constitutes a grade of zero for the parts missed. A student who arrives late for an examination will be seated but may not be granted extra time to complete the exam or view practical exam items.
- A student who is entitled to take either of the examinations under special conditions must ensure that appropriate arrangements are approved by, and made with Dr. Vaughan *well in advance* of the date of the first examination. Such accommodations must be approved by Boston University. A letter from a third party requesting special accommodations will not, by itself, guarantee the request.

Graduate students:

- Only those students who are properly registered for the course may take the examinations. It is your responsibility to be sure you are properly registered prior to the first set of examinations.
- A grade of "I" for incomplete work can be given only if the student is doing passing work at the time the "I" grade is requested. Incomplete grades are to be made up within 12 months by taking a comparable (spring or summer) histology course.
- The policy and deadlines governing withdrawing from Histology are that of the University. Be sure you know when the deadlines occur.

14. Make-up Examinations

Medical students who receive a failing (F) or marginal pass (MP) grade in Histology have an opportunity to remediate that grade with a make-up examination given in late June at a date determined by the Course Director in consultation with the Office of Student Affairs. The make-up examination has practi-

cal and written portions and covers the *entire* course. Passing grades for the make-up exam will be set by the faculty and may require higher performance levels than those set in the fall.

The Division of Graduate Medical Sciences does **not** allow for make-up examinations for graduate students.

There is usually a summer histology course (GMS AN 700s), essentially identical to this one, which both medical and graduate students can take to demonstrate their improved proficiency. A spring histology course, also essentially identical to this one, is available for the GMS students.

15. Student Advisory Committee (SAC)

In our effort to keep abreast of, and respond to, student concerns and issues while the course is in progress, and to provide a forum for student input to faculty (and vice versa), we schedule weekly meetings with student representatives during the fall. The purpose is to help us maintain some awareness of your thoughts, opinions, concerns, complaints, questions, and rumors regarding the course and course materials.

Student representatives will be volunteers from each of the eight laboratory groups. Once you know the identity of your SAC Representative, you can check with him or her to relay your thoughts to the committee. We will publish the names of the Student Reps on the CourseInfo site. Reports of the discussions of the meetings will be relayed to the class via email and to the labs by their SAC representatives.

This relatively formal SAC forum for feedback does not preclude your communicating your concerns and thoughts to Dr. Vaughan at any time while the course is in progress. We aim to keep the course as problem-free as possible so that you can devote your limited time and energy to understanding the material we present.

On the final day of class, we will ask that you complete a **Course Feedback Questionnaire**. This tool helps us improve subsequent classes.

COURSE FACULTY

Full-time faculty members of the Department of Anatomy and Neurobiology at Boston University School of Medicine teach in the Medical Histology course. The Department office is located in L-1004.

Members of this Department are also responsible for teaching the Gross Anatomy and Neuroscience courses for Medical students and for Dental students, as well as numerous more advanced courses for graduate students.

The following Department members are the faculty of the Histology course.

Office Phone ext. e-mail

Course Director:

Vaughan, DeborahL1002.....8-5311dvaughan@bu.edu

Faculty:

Blatt, Gene.....R1003.....8-5260gblatt@cajal-1.bu.edu

Luebke, Jennifer.....M 923.....8-5995jluebke@bu.edu

Rushmore, JarrettW702.....8-4188rushmore@bu.edu

Sanchez, IvelisseL813.....4-2350isanchez@bu.edu

Soghomonian, Jean-Jacques...R1001.....8-4511jsogho@bu.edu

Toth, Louis.....X BR03.....8-5885ltoth@bu.edu

Meetings with faculty members can be arranged by telephone, e-mail, or in person. Please feel welcome to do so.

Faculty Research Interests

When we are not teaching, most of us are actively involved in biomedical laboratory research projects. We welcome the opportunity to discuss our research interests with students. Here's a brief summary of what we do.

Dr. Gene Blatt, Associate Professor of Anatomy and Neurobiology

A major research interest is the neurobiology of autism affecting cerebellar and limbic circuitry and neurotransmitter systems. Additional research interests focus on the anatomical connections of limbic system neurons involved in learning and memory. A third interest concerns the effects of prenatal protein malnutrition on brain neurochemistry.

Dr. Jennifer Luebke, Associate Professor of Anatomy and Neurobiology, and of Psychiatry

Research is focused on the examination of the electrophysiological and morphological properties of hippocampal and neocortical neurons in *in vitro* slices using whole cell patch clamp techniques. Principal research goals are: 1) to determine the effects of aging on neurons in the rhesus monkey; 2) to determine the effects of prenatal protein malnutrition on neurons in the rat, and; 3) to elucidate the interactions between Layer I inhibitory neurons and Layer II/III principal cells on a "microcircuit" level in the neocortex.

Dr. Jarrett Rushmore, Assistant Professor of Anatomy and Neurobiology.

Dr. Rushmore studies the capacity of the brain to adaptively reorganize following focal brain injury. He also uses reversible cooling deactivation to study the contribution of specific brain regions to activity in other connected brain areas, and to behavior. He is particularly interested in the organization, function and plasticity of neural circuitry underlying the orienting response.

Dr. Ivelisse Sanchez, Assistant Professor of Anatomy and Neurobiology

Research is focused on the role of cell survival and differentiation signaling pathways in the nervous system. The long-term goal of the Sanchez lab is to understand the cellular and molecular basis of neurological and psychiatric disorders. Experimental approaches include molecular and chemical biology, and functional proteomics.

Dr. Jean-Jacques Sghomonian, Assoc. Prof. of Anatomy and Neurobiology

Research focuses on the functional neuroanatomy of the basal ganglia and the neurobiological basis of motor control, sensorimotor integration and learning. He is particularly interested by the mechanisms of regulation of GABAergic neurons in the basal ganglia of normal animals and experimental models of Parkinson's disease. Experimental approaches include analysis of protein/peptide expression by quantitative *in situ* hybridization histochemistry and immunohistochemistry and recording of correlated behavioral activity.

Dr. Louis Toth, Assistant Professor of Anatomy and Neurobiology

Dr. Toth's interest is in studying how the brain codes and computes information between a sensory input and a behavioral output. These studies incorporate three main techniques: 1) recording from single or small populations of neurons in anesthetized animals responding to visual stimuli, 2) imaging of neuronal activity using intrinsic optical signals, voltage-sensitive dyes, and fMRI techniques, and 3) recording and imaging from awake monkeys trained to perform cognitive tasks.

Dr. Deborah W. Vaughan, Professor of Anatomy and Neurobiology

Scientific interests reside in the cellular morphology of the central nervous system, and aging nervous system. Recent studies focused on the effects of advancing age and the ability of motor neurons to regenerate axons following injury, using the rat facial nerve as a model. Central and peripheral components of the facial neuromuscular system have been examined with light and electron microscopy in conjunction with morphological, cytochemical, and immunocytochemical analyses. Dr. Vaughan is no longer conducting basic science research. She serves as BUSM Assistant Dean of Admissions.