



**West Virginia University  
Health Sciences Center**

**Welcome to the  
Interdisciplinary Graduate Programs  
in the  
Biomedical Sciences (IGPBMS)**

Office of Research & Graduate Education WVU Health Sciences Center

**August 2014**

## Table of Contents

Boot Camp Orientation Schedule.....	6
Interdisciplinary Graduate Programs in the Biomedical Sciences (IGPBMS).....	9
Overview.....	9
Office of Research & Graduate Education.....	9
Student’s Individual Development Plan (IDP).....	10
First-Year Biomedical Core Curriculum.....	11
Boot Camp.....	11
First (Fall) Semester.....	11
Registration.....	11
Registration Process.....	11
Fall-Semester Course Registration.....	12
Fall-Semester Course Information.....	12
Second (Spring) Semester.....	12
Summer Semester.....	12
Short Lab Experience.....	13
Financial Package and Fees.....	14
Stipend & Tuition Coverage.....	14
Student Health Insurance.....	14
Fees.....	14
Evaluation of Student Progress, Grading, & Credit Transfer.....	15
Evaluation of Student Progress.....	15
Undifferentiated First Semester/First Year.....	15
After Entry into a Graduate Program.....	15
Grading System and Reporting of Grades.....	15
Transfer of Graduate Credits/Courses.....	16
Selection of Faculty Dissertation Mentor and Graduate Program.....	17
Selection of Faculty Dissertation Mentor.....	17
Selection of a Graduate Program.....	17
Work Schedule, Vacation, Sick Leave, Leave of Absence Policy.....	18
Work Schedule, Vacation, and Sick Leave.....	18
Core Curriculum – Year 1 – Fall Semester.....	19
Foundation for Contemporary Biomedical Research 1 - BMS 793A.....	20
Foundation for Contemporary Biomedical Research 2 (BMS 793B).....	26
ADTP: Studies in Biomedical Sciences – BMS 791B.....	33
Cellular Methods – BMS 706.....	34
Course Coordinators.....	34
Course Description.....	34
Course Goal.....	34
Objectives.....	34
Recommended Textbook.....	34

Assignments .....	34
Reading Assignments.....	34
Weekly Homework Assignments.....	34
Classroom Assignments .....	35
Grading .....	35
Course Policies .....	35
Attendance and Tardiness .....	35
Course Concerns/Feedback .....	35
Classroom Etiquette .....	35
Technology Use.....	35
Groups .....	35
Support Services.....	36
Academic Integrity.....	36
Inclusivity Statement .....	36
Guidelines for Absences Due to Military Service Requirement .....	36
Discussions on Scientific Integrity – BMS 700 .....	38
Activities.....	38
Short Lab Experience – BMS 791A.....	40
Coordinators .....	40
Objectives .....	40
Research Profile of Available Mentors.....	40
Matching with a Rotation Mentor .....	40
Schedule.....	40
How to choose your rotations .....	41
Expectations .....	41
Grading .....	42
How to choose your Ph.D. dissertation mentor/laboratory .....	43
Criteria to be an Available Mentor .....	43
Core Curriculum – Year 1 – Spring Semester .....	44
Spring Semester .....	44
Core Curriculum – Year 1 – Summer Semester .....	45
Scientific Writing – BMS 720.....	46
Summer: Year 2 of training.....	46
Purpose – Part I .....	46
Goal .....	46
Class.....	46
Text.....	46
Online .....	46
Reference Management.....	47
Exercises and Assignments .....	47
Grading: S/U .....	47
Due Date.....	47

Purpose – Part II .....	48
Goal .....	48
Textbook .....	48
Web .....	48
Grading .....	49
Due Date.....	49
Graduation Requirements.....	50
Successful Completion of the Ph.D. Degree Requires:.....	50
Registration.....	50
Ph.D. Examinations and Defense.....	50
Qualifying (comprehensive) Examination.....	50
Dissertation Proposal Defense.....	51
Dissertation Defense .....	51
First-Author Manuscript.....	51
Dissertation Committee (Committee Approval Form).....	52
Plan of Study.....	52
Review Article .....	53
Shuttle Sheet Request .....	53
Shuttle Sheet.....	53
Electronic Submission of Dissertation .....	53
Application for Graduation and Diploma Form.....	53
Exit Interview.....	54
Investiture/Commencement.....	54
Postdoctoral Fellowship .....	54
Survival Skills .....	55
Survival Skills.....	55
Year 1 .....	55
Year 2 to Graduation.....	55
Celebrations.....	56
Postdoctoral Fellowship .....	56
Additional Information To Know.....	56
Scientific Integrity & Social Justice.....	57
Academic Dishonesty.....	57
Social Justice .....	57
Disability.....	58
Academic Rights and Responsibilities.....	58
Inclusivity Statement .....	58
Academic Probation and Appeal.....	59
Academic Probation, Suspension, & Dismissal .....	59
Academic Suspension and Reinstatement .....	59
Appeal of Dismissal for Failure to Meet Academic Standards.....	59
Career Opportunities .....	61

Graduate Student Organization (GSO) .....	62
WVU and Health Sciences Center .....	63
Bookstores .....	63
Campus Transportation.....	63
Food.....	63
Mail and Mailboxes .....	63
Parking.....	63
Phone Access .....	64
Photocopying and Printing.....	64
Student Address Records .....	64
Student ID Cards.....	64
Seven Ph.D. Training Programs .....	65
Addendum .....	66
Compact Between Biomedical Graduate Students and Their Research Advisors .....	67
Core Tenets of Pre-doctoral Training .....	67
Commitments of Graduate Students .....	68
Commitments of Research Advisors .....	69
NIH Biosketch.....	71
Research Compliance Information.....	72
Evaluation Form for Short Laboratory Experience.....	73
Long-Term Leave of Absence Policy for HSC Graduate Programs.....	75
1. Introduction and Definition.....	75
2. Policy .....	75
3. Types of Leave and Procedures.....	75
4. Exceptions/Conditions.....	76

## Boot Camp Orientation Schedule

### Day 1 Monday, August 11

Time/Location	Event	Facilitator
7:45 am 2266 HSS	Continental Breakfast - provided	
8:00 am 2266 HSS	Registration / I-9 Tax forms Health Insurance Welcome to the week	HSC Office of Research and Graduate Education Dr. Lisa Salati
9:00 am Bennett Tower	Get ID cards	Staff - Office of Research and Graduate Education
10:30 am 201 Erma Byrd	The first year curriculum. Brief presentation of courses that are available during the first year.	Course Coordinators for each course
12:00 pm 201 Erma Byrd	Lunch -provided Laboratory safety	Stephanie Graham-Sims
1:30 pm 201 Erma Byrd	Your well-being	Dr. Shane S. Chaplin, Psychologist, The Carruth Center
2:30 pm 201 Erma Byrd	How to read and critique a journal article Students get into groups of 4-5 and can begin preparation*	Lisa Salati
4:00 pm 201 Erma Byrd	Introduction to the Animal facilities: Vivarium; Transgenic facility ACUC	Dr. Peter Mathers Mindy Hollander
6:30 pm Dinner/social Barnett home	New Students and Faculty Ethics and the scientist – Developing a trustworthy reputation	Hosted by Department Chairs

\*Students will all receive the same paper during the summer and have a chance to read it before their arrival. They will be divided into 4 groups to develop a presentation of it and will present separately to a small group of faculty/graduate students. This session will be for them to discuss the paper and what they still need to understand before presenting it on Friday.

### Day 2 Tuesday, August 12

Time/Location	Event	Facilitator
8:00 am 201 Erma Byrd	Introduction to Experimental Design -hypothesis versus question -controls -troubleshooting	Dr. David Smith
9:00 am Micro lab	Lab Exercise 1 – Protein assays and Western analysis	Faculty in CIP/PPS/ExPhys
12:00 pm 201 Erma Byrd	Lunch - provided Journal club presentation – formal presentation style	Current Students
1:30 pm Micro lab	Lab Exercise 2 – RT-PCR	Faculty in BMB/CCB
4:30 pm Faculty offices	Student-Advisor meeting Curriculum design Review of transcripts	Faculty Mentor and Student
6:30 pm Dinner/Social Berrebi home	Presentations on the different graduate programs New Students and faculty	Hosted by Graduate Directors

**Day 3 Wednesday, August 13**

<b>Time/Location</b>	<b>Event</b>	<b>Facilitator</b>
8:00 am 201 Erma Byrd	Student resources on SOLE Common Grad Room	Andrew Flinn and Dr. Lisa Salati
9:00 am Library – computer room	Pubmed and reporter tutorials Bibliography manager –Refworks, a free software that transitions with Endnote	Virginia Desouky, librarian
10:00 am Library – computer room	Keeping a Laboratory Notebook Electronic lab notebook (we can demo this) NIH Reporter	Dr. Lisa Salati
12:00 pm 201 Erma Byrd	Lunch - provided Journal club presentation – group discussion style	Current Students
1:30 pm Micro. lab. 205 HSN	Lab exercise 3 – ELISA	Faculty in Neuro/Micro
4:30 pm 201 Erma Byrd	Introduction to IDP	Jess Hall and Ashley Petrone, graduate students
	Dinner on their own – do IDP in evening on own	

**Day 4 Thursday, August 14**

<b>Time/Location</b>	<b>Event</b>	<b>Facilitator</b>
8:00 am 201 Erma Byrd	Student groups meet for journal club preparation	
9:00 am Library – computer room	Laboratory exercise 4 Introduction to Bioinformatics	Dr. Mary Davis
12:00 pm 201 Erma Byrd or outside	Lunch – provided Beyond the Laboratory	Dr. Lisa Salati
1:30 pm 201 Erma Byrd	Graduate Academy and Linking Innovation, Industry, and Commercialization (LIINC)	Jenny Douglass Lindsay Emery
3:00 pm Laboratories of available mentors	Meeting available mentors Students will choose 5 faculty from the available mentor list. The student needs to find the five labs and return with the signature of the mentor or a lab member.	Faculty and personnel in their lab Student volunteers to help students find the eye center
6:30 pm Dinner/social Salati house	Survival skills the student perspective; Introduction to the Graduate Student Organization (GSO) Open to all graduate students	Hosted by GSO

**Day 5 Friday, August 15**

<b>Time/Location</b>	<b>Event</b>	<b>Facilitator</b>
8:00 am 201 Erma Byrd	Small Group meetings for journal club prep	New Students and facilitator
9:00 am - 201 Erma Byrd, Micro, Wirtz, Flemming conf rooms	Journal Club presentations Each group does this separately	New Students and faculty advisors
10:30 am 201 Erma Byrd	Foundations for Contemporary Biomedical Research – presentations by block leaders	New Students/block leaders
12:00 pm	Lunch - provided	
1:00 pm 201 Erma Byrd	Time management	Drs. Paul Chantler and Roberta Leonardi
3:00 pm meet at NIOSH	Tour of the National Institute for Occupational Safety and Health (NIOSH)	
6:30 pm	Dinner on own	

**Day 6 Saturday, August 16 –Westvaco**

<b>Time/Location</b>	<b>Event</b>	<b>Facilitator</b>
9:00 am	Research rotations -purpose -how to select	Dr. Fred Minnear
10:00 am	Student – advisor meeting Results of IDP and rotation selection planning	New Students and faculty advisors
11:00 am	Career Planning and your time in graduate school Writing your letter of recommendation	Dr. Lisa Salati
12:00 pm	Lunch – provided	
1:30 pm	Outdoor activity	Current Graduate students
5:00 pm	Dinner on own	

**Day 7 Monday, August 18 – First Day of class WVU but students start on Tuesday**

<b>Time/Location</b>	<b>Event</b>	<b>Facilitator</b>
9:00 am	Foundations Class – first session	
11:30 am	Pictures	Penny Phillips
12:30 pm	Lunch on your own	
1:30 pm Faculty offices	Final advisor IDP/research rotation discussions – if needed	New student/faculty advisor
3:30 pm 201 Erma Byrd	Student feedback on Boot Camp	Faculty
4:00 pm	Alumni Affairs	Lynda Nine
5:00	Boot Camp completed	
	Dinner on own	



## Interdisciplinary Graduate Programs in the Biomedical Sciences (IGPBMS)

The IGPBMS resides in the Schools of Medicine and Pharmacy at the West Virginia University Robert C. Byrd Health Sciences Center. As an IGPBMS student, you will enter as an undifferentiated student and take core coursework and conduct at least three research rotations (called short lab experience). You will have the opportunity to select a graduate program (one of seven Ph.D. degree-granting programs) and faculty dissertation mentor by December of Year 1 or continue as an undifferentiated student into the spring semester, at which time you will select a mentor and graduate program by May of Year 1.

There are many rewarding careers in science, which you will have the opportunity to prepare for. Our IGPBMS will provide you with the research skills and knowledge to complete an original PhD project and publish in peer-reviewed journals and with professional skills and career guidance to enable you to proceed to the next career level. Original research is defined as obtaining original data that makes novel and important contributions to knowledge in the broad field of biomedical sciences. The most common career path following graduation is to obtain postdoctoral training in a research laboratory in academia, government, or industry. Most of our students obtain postdoctoral fellowships, whereas a few obtain junior-level positions in pharmaceutical or biotechnology companies. In addition to academia and pharmaceuticals, graduates enter careers in biotechnology, teaching, business, patent law, research development, scientific writing, etc.

### Overview

You will start your graduate studies with a seven-day program known as Boot Camp that will prepare you to successfully transition into graduate studies, allow you to interact personally and at social events with faculty and resident students, and allow you to enjoy the outdoors. The first semester of Year 1 is an undifferentiated semester in which you take coursework that covers topics important to all graduate programs and conduct three short lab experiences to help you select a mentor for your dissertation research. By the end of the first semester, you may choose to enter one of our seven graduate programs (listed below) or continue into the second semester as an undifferentiated student in terms of program selection. During the second semester, whether you have transitioned into a graduate program or not, you can continue with conducting short lab experiences, unless you have matched with a faculty mentor. Each graduate program offers a course in the second semester to begin the process of learning discipline-specific information, and your chosen program and/or faculty mentor may require that you take the course in molecular biology. In the summer of Year 2, you will take *Scientific Writing* and complete assignments in two separate writing skills: an NIH pre-doctoral fellowship grant and a scientific journal article. By May of Year 1, all students will have selected a dissertation mentor and a graduate program. Once in a graduate program, you will abide by the rules and guidelines of that program (specific program handbook) as you progress to completion of the Ph.D. degree.

### Office of Research & Graduate Education

The Assistant VP for Graduate Education, the Director of Graduate Recruiting and Program Development, and staff assistants in the HSC Office of Research & Graduate Education administer the first year of graduate training.

Fred L. Minnear, PhD Assistant VP for Graduate Education	2267 HSS	(304) 293-6229 (304) 692-2860 ( <i>cell</i> )	<a href="mailto:fminnear@hsc.wvu.edu">fminnear@hsc.wvu.edu</a>
Lisa Salati, PhD Director of Graduate Recruiting and Program Development	3096A HSN	(304) 293-7759	<a href="mailto:lsalati@hsc.wvu.edu">lsalati@hsc.wvu.edu</a>
Andrew Flinn Assistant Director of HSC Graduate Education	2271 HSS	(304) 293-7116	<a href="mailto:arflinn@hsc.wvu.edu">arflinn@hsc.wvu.edu</a>
Lea Ann Defenbaugh Program Specialist	2271 HSS	(304) 293-4437	<a href="mailto:ldefenbaugh@hsc.wvu.edu">ldefenbaugh@hsc.wvu.edu</a>
Penny Phillips Administrative Assistant	2271 HSS	(304) 293-6231	<a href="mailto:pPhillips@hsc.wvu.edu">pPhillips@hsc.wvu.edu</a>

**NOTE: The University and our Office will communicate with you throughout your training via your WVU MIX email address.**

#### Student's Individual Development Plan (IDP)

The IDP provides resources to help you evaluate your skills and interests in:

- Scientific Knowledge
- Research Skills
- Communication (writing and speaking)
- Professionalism
- Management and Leadership
- Responsible Conduct of Research
- Career advancement

This information will be used to build the necessary skill set and to help in decisions regarding your future career options. The role of the dissertation mentor is to help you to either achieve these skills or identify resources that can augment your skills or inform your career decisions. The IDP is to be reviewed annually.

The Biomedical graduate program will use the IDP at Science Careers. All incoming biomedical students will complete this IDP and discuss their results with a faculty advisor during Boot Camp, the week before school starts. Once you join a laboratory, you are to annually retake the IDP and review the results with your mentor. You will complete the IDP Annual Review form (available under Forms) and use this in your discussions with your mentor. The mentor should sign the form and copies are to be placed in your file kept by the graduate program and in your file kept by the Office of Research & Graduate Education.

The IDP will be required in all training grants and many pre-doctoral fellowships starting October 2014. The Behavioral and Biomedical (BBS) NIH-T32 supported training program has developed their own IDP form and this one will substitute for the Science Careers IDP for students in that training program.

**NOTE: During orientation, you will be asked to develop an individual development plan (IDP) to guide you toward your scientific career. The IDP is to be updated and reviewed annually by your faculty mentor.**

## First-Year Biomedical Core Curriculum

### Boot Camp

Boot Camp is a seven-day program (starting Monday, August 11) that will prepare you to successfully transition into graduate studies and allow you to interact personally and at social events with faculty and resident students and to enjoy the outdoors. Planned sessions include scientific record keeping, introduction to the animal facilities, introduction to experimental design, laboratory exercises, reading, critiquing, and presenting journal articles, learning about business and industry opportunities, individual and group meetings with faculty, starting an individual development plan that will guide you through your graduate education and early scientific career, and dinner/socials with departmental chairs, program directors, and resident students. Boot Camp starts at 8:00 AM most mornings and on many nights continues through dinner. Thus, we recommend that you not plan on running errands or other tasks during this week. Boot Camp concludes on Monday, August 18, includes Saturday, August 16, and Sunday, August 17 is an off-day.

### First (Fall) Semester

Classes begin the 4<sup>th</sup> week of August, and fall semester ends during finals week, the 2<sup>nd</sup> week of December (final exam week is December 11-17). The main first semester course is *Foundations for Contemporary Biomedical Research*, divided into A&B parts, 4-credits each. It is organized in blocks with topics in biochemistry, cell biology, and integrative systems (physiology, neuroscience, immunology & microbial pathogenesis, with an overview of pharmacology). The meetings with faculty advisors during Boot Camp will assess if you can substitute advanced independent study for portions of the Foundations course. A course outline, learning objectives, and information on how you can prepare for the course and the advance study option was previously sent to you. *Cellular Methods*, a graduate student-taught and -organized course involves learning the theory behind various methodologies and the use of a journal club to demonstrate how these methods can be applied to experimental studies. The third course, *Discussions on Scientific Integrity*, meets biweekly, is led by individual faculty, and incorporates small and large group discussions of ethical issues presented as scientific case studies. Concurrent with coursework, you will conduct three, four-week short lab experiences and attend seminars, forums, and journal clubs that correspond to each laboratory.

### Registration

To receive/maintain a stipend and full tuition coverage, you must register for a minimum of 9 credits in the fall and spring semesters and for a minimum of 3 credits in summer semester. You must be registered in every semester until completion of the dissertation defense, or request a leave of absence, at which time your stipend and tuition coverage will be suspended.

STAR Web registration system: <http://registrar.wvu.edu/courses>

### Registration Process

1. Point your browser to <http://www.mix.wvu.edu/>
2. You will see the "Mountaineer information Xpress" with the MIX Login Screen
3. Enter your Username and Password. If your MIX account is [jdoe@mix.wvu.edu](mailto:jdoe@mix.wvu.edu), then your Username is Jdoe. Your password is your 2-digit day of birth and the last 4 digits of your WVU ID.
4. Click "OK"
5. On the next page, click the STAR tab on the top

6. Click "Click here to enter STAR"
7. Select the Student Services, Housing & Financial Aid link. You are now connected to STAR.
8. Select Registration link
9. Click on Select Term link. Use the pull down option to select desired term. Click on Submit
10. Select Add or Drop Classes link
11. Enter each CRN in the blocks and click on the Submit Changes button
12. You can review your schedule by selecting the Student Schedule or Student Detail Schedule links
13. If you are in STAR longer than 20 minutes MIX will time-out due to inactivity on the MIX pages

### Fall-Semester Course Registration

Course	Subject	CRN#	Section	Credits
Discussion on Scientific Integrity	BMS 700	83644	001	1
Cellular Methods	BMS 706	87099	001	1
ADTP: Short Lab Experience	BMS 791A	89305	001	2
SPTP: Fndtn-Cntmp Biomd Rsrch1	BMS 793A	89528	003	4
SPTP: Fndtn-Cntmp Biomd Rsrch 2	BMS 793B	89305	001	4

### Fall-Semester Course Information

Course	Coordinator	Time	Room
Fndtn-Cntmp Biomd Rsrch 1	Schaller	9-10:50 am, M-F	N4007
Fndtn-Cntmp Biomd Rsrch 2	Mawhinney	9-10:50 am, M-F	N4007
Cellular Methods	Salati	11-12:30 pm, F	N4007
Discussions on Scientific Integrity	Minnear	12:00-1:30 pm, T	201 EB
Short Lab Experience	Minnear		

### Second (Spring) Semester

Second (spring) semester begins the second week of January and ends during finals week, the 1<sup>st</sup> week in May. During the second semester, whether you have transitioned into a graduate program or not, you can continue with conducting short lab experiences, unless you have matched with a faculty mentor. Each graduate program offers a course in the second semester to begin the process of learning discipline-specific information, and your chosen program and/or faculty mentor may require that you take *Molecular Biology*.

### Summer Semester

Summer semester begins the third week of May and ends the first week of August. During your first summer of Year 1, you will begin your research activities with your chosen faculty mentor. You will have the option in the first half of the Summer Semester to take another short lab experience, if you are still undecided about which research laboratory to select.

In the summer of Year 2, you will take *Scientific Writing*. In this course, you will attend weekly lectures and complete assignments in two separate writing skills: an NIH pre-doctoral fellowship grant and a scientific journal article.

**NOTE:** Remember Dr. Minnear's motto: "**Write Early-Write Often**"

Many of the faculty teaching the courses in the first-year and throughout your graduate program use SOLE to convey course material. The Office staff will connect you to the SOLE site - <http://www.hsc.wvu.edu/its/ApplicationsWeb/SOLE/Default.aspx>

### Short Lab Experience

You have received a booklet with one-page research profiles of available faculty for rotations and mentoring. Additional faculty may be added to the list as funding and funding opportunities arise. During the first semester, you will conduct three, four-week short lab experiences. It is encouraged that you have these research experiences in three different laboratories and if possible in laboratories of three of the seven biomedical sciences graduate programs, so that you will acquire a broad perspective of the research activities of the participating graduate faculty. The short lab experience also incorporates program- or rotation mentor-specific journal clubs.

1<sup>st</sup> experience - August 25 to September 19

2<sup>nd</sup> experience - September 29 to October 24

3<sup>rd</sup> experience - November 3 to December 5

Before each of the research rotations, we will ask you to submit three names of faculty with whom you would like to work with to complete your dissertation research. While you will most likely receive your first choice, we reserve the option to match you with your second or third choice based on criteria including competition with other first-year students for the same faculty mentor and research interests.

**NOTE:** Before Boot Camp, you will receive a booklet highlighting the research profiles of each available faculty.

**NOTE:** For rotations at the National Institute of Occupational Safety & Health [NIOSH, a government Center for Disease Control (CDC)-center], you must submit a security clearance form before conducting a short lab experience. This process should begin before you arrive for Boot Camp if you are interested in conducting a rotation at NIOSH. Please be aware that a dozen or more people at NIOSH and CDC are involved in the submission and approval processes. Thus, NIOSH staff request that only those students who are really interested in conducting research with scientists at NIOSH submit this form. If you are seriously considering doing research at NIOSH, contact the faculty member at NIOSH.

**NOTE:** Please refer to the Section on Core Curriculum and Short Lab Experience for more details concerning rotations.

## Financial Package and Fees

### Stipend & Tuition Coverage

As a PhD student, you will receive a stipend (currently \$25,000), full tuition coverage, and WVU student health insurance, the latter includes hospitalization and disability, throughout your training period if you maintain a GPA of 3.00, successfully pass the qualifying examination and dissertation proposal, and demonstrate excellent progress toward completion of PhD dissertation research. The Office of Research & Graduate Education pays the stipends for the first, 22 months (e.g., August 11, 2014 to June 30, 2016). The University pays in arrears, so your first paycheck will arrive on September 15. In Year 3 of training (2<sup>nd</sup> year in your mentor's laboratory), your stipend will be paid from your mentor's grant or start-up funds, from an institutional training grant, (e.g. T32, NSF IGERT, WVU NanoSafe), or from an individual pre-doctoral fellowship (NIH, American Heart Association, etc.), which you are expected to write. If these financial sources become unavailable, your mentor's department, your specific graduate program, or the Office of Research & Graduate Education will provide your stipend support assuming you are in good academic standing and continue to perform satisfactorily in research.

**NOTE:** Continued stipend support is reviewed annually and is dependent on good academic standing (minimum GPA of 3.00) and demonstration of satisfactory progress toward completion of dissertation research.

**NOTE:** It is essential to have a faculty mentor to conduct PhD dissertation research. Lack of fulfillment of this requirement may lead to dismissal from the IGPBMS.

**NOTE:** Graduate study is a full-time commitment. Any outside employment will detract from your academic efforts. The first day of graduate studies is the first day of your scientific career!!

### Student Health Insurance

Coverage of health insurance, primarily hospitalization and disability, starts on August 11. We will provide a temporary health insurance card the week of orientation. You should receive an official health insurance card in the mail later in the year. The insurance only covers you, the student. If you wish to add family, you can purchase extra insurance. The cost (we pay) per student is ~\$800. An on-campus representative will be at our orientation on August 11th.

Questions or inquiries about health insurance: Aetna customer service: 1-866-654-2338, [www.aetnastudenthealth.com](http://www.aetnastudenthealth.com) once at this website, find our institution. Email address: [sio@mail.wvu.edu](mailto:sio@mail.wvu.edu) or call (304) 293-6815.

### Fees

You must pay fees by Friday before the start of each semester to avoid a late charge. Payment may be made by credit card or banking information (account & a.b.a/routing numbers) for an electronic check payment.

## Evaluation of Student Progress, Grading, & Credit Transfer

### Evaluation of Student Progress

#### *Undifferentiated First Semester/First Year*

Your progress in terms of academic and professional standing and performance in the short lab experiences is monitored throughout the undifferentiated portion of your training by the Course Coordinators, your undifferentiated advisor, members of the Admissions Committee, and the Office of Research & Graduate Education. At the end of fall and spring semesters of Year 1 or until formal entry into one of the biomedical sciences graduate programs, the Admission Committee (also Academic Standards Committee for the 1<sup>st</sup>-year students) makes recommendations on continuation, probation, and dismissal for final approval by the Assistant VP for Graduate Education. At the end of the fall & spring semesters, the Assistant VP for Graduate Education provides each student with a written summary of the meeting of the Academic Standards Committee, highlighting achievements and, if appropriate, probationary information.

You are eligible to enter one of the seven biomedical sciences graduate programs by December of Year 1 provided you are in good standing in terms of academics, research, and professionalism. Good academic and research standing requires a 3.00 grade point average (GPA) (WVU Health Sciences policy) with a B or better grade in ADTP: Short Lab Experience.

**NOTE: Failure to achieve a GPA of 3.00 by the end of spring semester of Year 1 may lead to dismissal from the IGPBMS. If you are on probation at this time, you may have the opportunity to transfer to the M.S. program in the Biomedical Sciences. Herein, you must complete the M.S. degree before re-applying to the Ph.D. program. Please be aware that M.S students do not receive a stipend or tuition coverage from the Office of Research & Graduate Education.**

#### *After Entry into a Graduate Program*

Upon entry into your chosen graduate program, you will abide by the policies of that graduate program, and your progress until defense of your dissertation research will be monitored by your faculty mentor, graduate director, and dissertation committee. In some graduate programs, you are also evaluated annually by a graduate studies committee or by program-affiliated departmental faculty. The Office of Research and Graduate Education keeps data (University requirement) on student progress and assists the graduate directors in monitoring the progress of the students.

### Grading System and Reporting of Grades

Courses are graded as follows: A, B, C, D, or F, and P (pass) or F (fail). The Course Coordinator may submit letter grades with + or -, but your grade point average (GPA) is calculated using the basic letter grade. Grades of D and F are not acceptable for course credit toward a graduate degree but are used in calculating the GPA. Letter grades are given for the short lab experience in Year 1. Research 797 is graded S/U with the first unsatisfactory (U) grade for 797 serving as a warning grade – U's in research are not counted for the calculation of the GPA. However, a second U in research 797 is grounds for dismissal from the IGPBMS.

The grade of Incomplete (I) is given when the instructor believes that the course work is incomplete. All incompletes must be removed within the next semester of the calendar year. However, an individual instructor may require their removal within a shorter time period. If you receive an incomplete grade, you must contact the faculty member who issued the incomplete to discuss its removal. If an incomplete is not rectified within the next semester, it will be changed to a grade of F (IF). Changing an Incomplete grade requires a Grade Modification Form that should be submitted to the Office of Research and Graduate Education. The instructor of the course, the director of the graduate program, and the Assistant VP for Graduate Education must sign these forms. If removal of an Incomplete (I) grade cannot be met within the appropriate time frame, a written request from the faculty instructor must be made to the Registrar's Office

**NOTE:** You cannot graduate with a D or F grade on your Plan of Study. You must retake the course and improve the grade to graduate. Both grades will count toward your GPA on your transcript, and the higher grade will be placed in the Plan of Study.

**NOTE:** A first unsatisfactory (U) grade in research 797 is a warning grade. A second U is grounds for dismissal from the IGPBMS.

#### Transfer of Graduate Credits/Courses

As a Ph.D. student, you may transfer all credits with a B- grade or better with preference to those credits that apply directly to your graduate curriculum. Only graduate credits earned at academic institutions accredited at the graduate level may be transferred. WVU HSC Admissions & Records must receive an original transcript from the transferring institution. Transferred credits/courses may substitute for required courses in the first-year core curriculum and for advanced courses required by our seven Ph.D. training programs.

When transferring credits, please provide information about the course(s) you want to transfer and include the name of the institution with address and zip code, the course number and name, and course description/syllabus as published by that institution. Please make reference to the WVU course it may replace if it meets a course requirement. Attach the original transcript from the transferring academic institution to this form and deliver in hand to the Office of Research & Graduate Education (2271 HSS) for final approval. Final decisions regarding substitution of required courses with transferred courses will be made by the Course Coordinators, Graduate Admissions Committee, and/or your Graduate Director or Graduate Program Scholarship Committee, with the assistance of personnel in the Office of Research & Graduate Education.



## Selection of Faculty Dissertation Mentor and Graduate Program

### Selection of Faculty Dissertation Mentor

You have the opportunity to select a faculty mentor and graduate program by the December or May of Year 1. You will be asked to submit in rank order three names of faculty mentors. The Graduate Directors, Departmental Chairs, and the Office of Research & Graduate Education will assist you in the selection of a mentor. Remember the final decision rests with the faculty mentors.

Graduate Faculty that are available to become Dissertation (Research) Mentors are selected by the Office of Research & Graduate Education in consultation with the graduate directors and departmental chairs. The criteria to be an available mentor are:

To mentor a student the faculty investigator should:

1. Want to mentor a new student in his/her laboratory
2. Have extramural funding to support the student's stipend or the demonstration of submitted and pending grant applications within the past year
3. Have money for research supplies to support a student's dissertation research
4. Have an active research laboratory as identified by recent (within one year) publications.

Other considerations taken into account when assigning student mentorship:

1. Association (by the participating faculty mentor) with Institutional Fellowship Opportunities, such as the NSF IGERT, NanoSafe, the WVCTSI, or an NIH T32 training grant
2. Student supported by a Teaching Assistantship (TA)
3. Number of current students in the investigator's laboratory

**NOTE:** It is a requirement to match with a faculty mentor who will guide you to completion of your Ph.D. dissertation research. You are responsible to find/match with a faculty mentor. Lack of fulfillment of this requirement may lead to dismissal from the IGPBMS.

### Selection of a Graduate Program

After matching with a faculty mentor, please make the selection of a graduate program based on your individual career interests and the advice of your faculty mentor. As stated above, successful entry into a graduate program requires approval of the Admissions Committee (Academic Standards Committee) based on the recommendation of the graduate program of choice.

Upon entry into a specific Ph.D. training program, you are now under the auspices of that graduate program until completion of the Ph.D. degree. The table below depicts the seven PhD degree-granting graduate programs and their directors.

<u>Graduate Programs</u>	<u>Graduate Director</u>
Biochemistry & Molecular Biology	F. Bradley Hillgartner
Cancer Cell Biology	Scott Weed
Cellular & Integrative Physiology	Robert Brock
Exercise Physiology	John Hollander
Immunology & Microbial Pathogenesis	John Barnett
Neuroscience	Richard Dey
Pharmaceutical & Pharmacological Science	Jason Huber

## Work Schedule, Vacation, Sick Leave, Leave of Absence Policy

### Work Schedule, Vacation, and Sick Leave

The first day of your graduate studies is the first day of your career as a scientist. It is a big step-up from your undergraduate years and requires your ultimate commitment. Your first year of study focuses primarily on didactic education. Therefore, there are essentially set times for classes and holidays that follow the University calendar. In the Summer Semester, you will begin your dissertation research, so extended vacations during the summer are not permitted.

If you are sick for a journal club, class, or exam, please inform the faculty member in charge of that activity. This can be accomplished by phone or email or in person and should be done before the class or meeting. Do not assume that informing your mentor or a single faculty member of your absence will result in that absence being communicated to other faculty. Each faculty member with whom you have a class or other obligation must be informed individually for each absence. **BE PROACTIVE!**

Please become familiar with any policies with regard to absenteeism in the syllabi of your courses and in your chosen Ph.D. graduate program. Once you have entered a specific graduate program, the vacation schedule for the undergraduate University no longer applies. Discuss the expectations on vacation and sick policy with your mentor. These expectations are likely to vary among research laboratories so it is important to establish these expectations upon entry in the laboratory. You should be aware that these decisions are made in your best interest and for safety and efficient conduct of experiments. Please note that the Ph.D. degree is awarded based on completion of original dissertation research. Undue time spent away from the University will hamper your progress in research.

**NOTE:** Leave of Absence (LOA) Policy is located in the addendum

## Core Curriculum – Year 1 – Fall Semester

First (Fall) Semester – August 18 – December 12

<u>Courses</u>	<u>Credit Hours</u>
<b>Foundation for Contemporary Biomedical Research 1</b>	
<b>BMS (739A)</b>	<b>4</b>
Cells to Tissues to Organs	
Biochemistry	
Cells, Membranes, and Transport	
Cellular Communication	
<hr/>	
<b>Foundation for Contemporary Biomedical Research 1</b>	
<b>BMS (739B)</b>	<b>4</b>
Functional Significance of the Cytoskeleton	
Innate Immunity, Inflammation, and Cellular Microbiology	
Integrated Neurobiology	
Metabolic Homeostasis	
<hr/>	
<b>Cellular Methods (BMS 706)</b>	<b>1 (P/F)</b>
<hr/>	
<b>Discussions on Scientific Integrity (BMS 700)</b>	<b>1 (P/F)</b>
<hr/>	
<b>Short Lab Experience (BMS 791A)</b>	<b>2</b>
3, 4-week experiences	
1 <sup>st</sup> experience - August 25 to September 19	
2 <sup>nd</sup> experience - September 29 to October 24	
3 <sup>rd</sup> experience - November 3 to December 5	
<hr/>	
<b>TOTAL CREDITS</b>	<b>12</b>

Time	Monday	Tuesday	Wednesday	Thursday	Friday
9:00-9:50	FCBR 1&2 4007 HSN	FCBR 1&2 4007 HSN	FCBR 1&2 4007 HSN	FCBR 1&2 4007 HSN	FCBR 1&2 4007 HSN
10:00-10:50	FCBR 1&2 4007 HSN	FCBR 1&2 4007 HSN	FCBR 1&2 4007 HSN	FCBR 1&2 4007 HSN	FCBR 1&2 4007 HSN
11:00-12:30					Cellular Methods 201 Erma Byrd
12:00-1:30		Ethics 201 Erma Byrd			
1:00	Research	Research	Research	Research	Research

## Foundation for Contemporary Biomedical Research 1 - BMS 793A

### COURSE INFORMATION

#### Meeting Times and Classrooms:

Mon. – Fri.	9:00 – 9:50 A.M.	Lecture	HSC-N 4007
	10:00 – 10:50 A.M.	Lecture	HSC-N 4007

In general, there are lectures 4 days a week, but the days vary.

**Exam Reviews:** Designated day following final lecture at end of each Block.

TBA HSC-N 4007

**Examinations:** Designated day following Exam Review at end of each Block.

4:00 – 6:00 P.M. LC-1

#### Course Coordinators:

Dr. Michael Schaller  
 Dr. Scott Weed  
 Dr. Michael Mawhinney  
 Dr. Robert Brock

#### Block Leaders:

*Cells to Tissues to Organs* – Dr. Scott Weed  
*Biochemistry* – Dr. Mike Gunther  
*Cells, Membranes and Transport* – Dr. Jason Huber  
*Cellular Communication* – Drs. Mike Schaller & David Siderovski

**Grading:**                      **Examinations** – 85%                      **Student Presentations** – 15%

A traditional numerical scoring system will be used as a basis to generate a final letter grade:

**100% – 90% = A      80% – 89% = B      70% – 79% = C      60% – 69% = D      59% or less = F**

The actual grading scale may differ somewhat from the traditional 90-80-70 grading scale, at the discretion of the faculty in the course. However, scores exceeding 90% will receive an A, scores from 80-90% are guaranteed a minimum grade of B, and scores under 60% will receive a maximum grade of C.

#### **Examinations (85%):**

Examinations will be weighted equally and questions drawn from both lecture presentations as well as any additional resources as assigned by instructors. Exams are scheduled **at 4:00pm in LC-1.**

<b>EXAM 1:</b> August 27, 2014	(Lectures #1 through #12)
<b>EXAM 2:</b> September 10, 2014	(Lectures #13 through #26)
<b>EXAM 3:</b> September 22, 2014	(Lectures #27 through #38)
<b>EXAM 4:</b> October 8, 2014	(Lectures #39 through #56)

**Student Presentations (15%):**

To foster cooperative learning and an in-depth study of a particular topic of interest, students will be responsible for participating in a group presentation on a block-relevant issue. Each group will consist of 3 – 4 students and the presentation should last about 15 minutes. Presentations will be graded for their content, the quality of preparation, and the extent to which the presentation engages the class in a meaningful discussion. Each group member is expected to contribute to the presentation.

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**Policy Regarding Make-up Examinations**

The student should notify the course coordinators to make arrangements for a make-up exam if he/she is not going to be able to take an examination during the scheduled time. The make-up must be taken within one week of the scheduled exam period, or before the exam, if appropriate. Any exceptions must be approved by all of the course coordinators and the Instructors whose material is being examined.

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**Inclusivity Statement:**

The West Virginia University community is committed to creating and fostering a positive learning and working environment based on open communication, mutual respect, and inclusion. If you are a person with a disability and anticipate needing any type of accommodation in order to participate in this class, please advise me and make appropriate arrangements with the Office of Accessibility Services (293-6700). For more information on West Virginia University's Diversity, Equity, and Inclusion initiatives, please see <http://diversity.wvu.edu>.

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**Academic Integrity Statement:**

The integrity of the classes offered by any academic institution solidifies the foundation of its mission and cannot be sacrificed to expediency, ignorance, or blatant fraud. Therefore, I will enforce rigorous standards of academic integrity in all aspects and assignments of this course. For the detailed policy of West Virginia University regarding the definitions of acts considered to fall under academic dishonesty and possible ensuing sanctions, please see the Student Conduct Code:

[http://studentlife.wvu.edu/office\\_of\\_student\\_conduct/student\\_conduct\\_code](http://studentlife.wvu.edu/office_of_student_conduct/student_conduct_code)

Should you have any questions about possibly improper research citations or references, or any other activity that may be interpreted as an attempt at academic dishonesty, please see me before the assignment is due to discuss the matter.

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**Course Objectives/Learning Outcomes:**

The purpose of this course is to impart a fundamental understanding of the functional components of a cell, and the basis for regulation of cellular processes and organ systems. The knowledge base is developed in an interactive faculty-student environment that requires interpretation and rational speculation to apply general concepts to specific situations and stimulate creative scientific thought.

**Objectives**

- Impart a fundamental knowledge base
- Integrate molecular, cellular and physiological concepts
- Illustrate relevance through clinical examples
- Illustrate current relevance via the literature
- Stimulate student engagement and critical thinking

Assessable skills

- Understand important concepts, their significance and illustrate mastery of with examples.
- Apply the conceptual principles discussed to novel situations.
- Design and interpret experiments to test molecular, cellular and physiological mechanisms.
- Verbally articulate understanding of concepts during scientific discussion(s).
- Demonstrate teamwork and problem solving.

Date	Day	Wk	Lecture #	Time	Title/Topic	Leader/Lecturer
8/18/2014	Mon				<b>FIRST DAY OF THE SEMESTER</b>	
<b>Cells to Tissues to Organs - Blockleader = Weed</b>						
8/18/2014	M	1	1	9:00 AM	Course overview - Intro to Histology	Weed
	M	1	2	10:00 AM	Prokaryotic cells	Olson
8/19/2014	Tu	1	3	9:00 AM	Eukaryotic cells & organelles	Schaller
	Tu	1	4	10:00 AM	Eukaryotic cells & organelles	Schaller
8/20/2014	W	1	5	9:00 AM	Epithelial and glands - exo and endo	Weed
	W	1	6	10:00 AM	Connective tissue - adipose	Wysolmerski
8/21/2014	Th	1	7	9:00 AM	Nervous system	Ressetar
	Th	1	8	10:00 AM	Muscle	Ressetar
8/22/2014	F	1	9	9:00 AM	Vessels and endo	Wysolmerski
	F	1	10	10:00 AM	Immune	Weed
8/23/2014						
8/24/2014						
8/25/2014	M	2	11	9:00 AM	Stem cells and tissue regeneration	
	M	2	12	10:00 AM	Long range communication between organ systems	Mawhinney
8/26/2014	Tu	2		9:00 AM	<b>Student Presentations</b>	<b>FACULTY</b>
	Tu	2		10:00 AM	<b>Student Presentations</b>	<b>FACULTY</b>
	Tu	2		5:00 PM	<b>Cells to Tissues to Organs REVIEW</b>	<b>FACULTY</b>
8/27/2014	W	2		9:00 AM	<b>NO CLASS</b>	
	W	2		10:00 AM	<b>NO CLASS</b>	
	W	2		4:00 PM	<b>Cells to Tissues to Organs EXAM</b>	
<b>Biochemistry - Blockleader = Gunther</b>						
8/28/2014	Th	2	13	9:00 AM	Thermodynamics, water	Gunther
	Th	2	14	10:00 AM	Macromolecules	Gunther
8/29/2014	F	2	15	9:00 AM	Amino acids and peptides	Gunther
	F	2	16	10:00 AM	Primary and secondary protein structure	Gunther
08/30/14						
08/31/14						
09/01/14	M				<b>LABOR DAY</b>	
	M				<b>LABOR DAY</b>	
09/02/14	Tu	3	17	9:00 AM	Higher order protein structure	Gunther
	Tu	3	18	10:00 AM	Structure/Function #1, relationships in proteins	Gunther
09/03/14	W	3	19	9:00 AM	Protein structure/function #2, (hemoglobin and allostery)	Gunther
	W	3	20	10:00 AM	Enzyme catalysis strategies	Gunther
09/04/14	Th	3	21	9:00 AM	Enzyme kinetics 1 (Michaelis-Menton)	Smith
	Th	3	22	10:00 AM	Enzyme kinetics 2 and principles of inhibitors	Smith
09/05/14	F	3	23	9:00 AM	Allosteric and multisubunit kinetics	Smith
	F	3	24	10:00 AM	Regulation of enzyme activity	Smith
09/06/14						
09/07/14						
09/08/14	M	4	25	9:00 AM	Anaerobic bioenergetics	Smith
	M	4	26	10:00 AM	Biochemical Redox reactions	Smith

Date	Day	Wk	Lecture #	Time	Title/Topic	Leader/Lecturer
09/09/14	Tu	4		9:00 AM	<b>Student Presentations</b>	<b>FACULTY</b>
	Tu	4		10:00 AM	<b>Student Presentations</b>	<b>FACULTY</b>
	Tu	4		5:00 PM	<b>Biochemistry REVIEW</b>	<b>FACULTY</b>
09/10/14	W	4		9:00 AM	<b>NO CLASS</b>	
	W	4		10:00 AM	<b>NO CLASS</b>	
	W	4		4:00 PM	<b>Biochemistry EXAM</b>	
<b>Cells, Membranes and Transport - Blockleader = Huber</b>						
09/11/14	Th	4	27	9:00 AM	Membranes composition overview	<b>Huber</b>
	Th	4	28	10:00 AM	Passive Diffusion	<b>Huber</b>
09/12/14	F	4	29	9:00 AM	Membrane organization - proteins and carbohydrates I	<b>Huber</b>
	F	4	30	10:00 AM	Membrane organization - proteins and carbohydrates II	<b>Huber</b>
TBA	TBA				Dept of Basic Pharmaceutical Sciences Seminar Ian Simpson - Penn State	
09/13/14						
09/14/14						
09/15/14	M	5	31	9:00 AM	Facilitative diffusion	<b>Huber</b>
	M	5	32	10:00 AM	Pumps	<b>Huber</b>
09/16/14	Tu	5	33	9:00 AM	Symporter/antiporter and endocytosis	<b>Huber</b>
	Tu	5	34	10:00 AM	Ion channels	<b>Huber</b>
09/17/14	W	5	35	9:00 AM	Calcium homeostasis	<b>Lockman</b>
	W	5	36	10:00 AM	Membrane bound enzymes	<b>Huber</b>
					Pharmacological targeting of channels and transporters I	
09/18/14	Th	5	37	9:00 AM	Pharmacological targeting of channels and transporters I	<b>Lockman</b>
	Th	5	38	10:00 AM	Pharmacological targeting of channels and transporters II	<b>Lockman</b>
09/19/14	F	5		9:00 AM	<b>Student Presentations</b>	<b>FACULTY</b>
	F	5		10:00 AM	<b>Student Presentations</b>	<b>FACULTY</b>
	F	5		5:00 PM	<b>Cell Membranes &amp; Transport REVIEW</b>	<b>FACULTY</b>
09/20/14						
09/21/14						
09/22/14	M	6			<b>NO CLASS</b>	
	M	6			<b>NO CLASS</b>	
	M	6		4:00 PM	<b>Cell Membranes &amp; Transport EXAM</b>	
<b>Cellular Communication - Basic Mechanisms - Blockleader = Schaller/Siderovski</b>						
					General Principles - modes, ligands, receptors, etc	
09/23/14	Tu	6	39	9:00 AM	General Principles - modes, ligands, receptors, etc	<b>Schaller</b>
	Tu	6	40	10:00 AM	Making ligands secretory pathway 1	<b>Ramamurthy</b>
09/24/14	W	6	41	9:00 AM	Secretory pathway 2	<b>Ramamurthy</b>
	W	6	42	10:00 AM	Exocytosis and secretion	<b>Ramamurthy</b>
09/25/14	Th	6	43	9:00 AM	<b>Endocytosis</b>	<b>Ramamurthy</b>
	Th	6	44	10:00 AM	Excitable cells and unidirectional conduction 1	<b>Mawhinney</b>
					Excitable cells and unidirectional conduction 2	
09/26/14	F	6	45	9:00 AM	Excitable cells and unidirectional conduction 2	<b>Mawhinney</b>
	F	6	46	10:00 AM	Synaptic transmission	<b>Mawhinney</b>



Date	Day	Wk	Lecture #	Time	Title/Topic	Leader/Lecturer
09/27/14						
09/28/14						
09/29/14	M	7			<b>NO CLASS</b>	
	M	7			<b>NO CLASS</b>	
09/30/14	Tu	7	47	9:00 AM	Signal Initiation - Ligand and Membrane Receptors	Schaller
					Signal Propagation - Kinases and GTP	
	Tu	7	48	10:00 AM	Binding Proteins	Schaller
10/01/14	W	7	49	9:00 AM	Lipids and Second Messengers	Schaller
	W	7	50	10:00 AM	Signaling to the Nucleus	Schaller
10/02/14	Th	7	51	9:00 AM	Lipids and Steroids as ligands - signaling	Siderovski
	Th	7	52	10:00 AM	Signaling integration - molecular pathways - vision	Ramamurthy
					Control of cell cycle - molecular signaling	
10/03/14	F	7	53	9:00 AM	pathways	Frisch
					Control of cell death - molecular signaling	
	F	7	54	10:00 AM	pathways	Frisch
10/04/14						
10/05/14						
10/06/14	M	8	55	9:00 AM	Apoptosis - general	Frisch
					Apoptosis - different cells, e.g. muscle and	
	M	8	56	10:00 AM	nerve	Frisch
10/07/14	Tu	8		9:00 AM	<b>Student Presentations</b>	<b>FACULTY</b>
	Tu	8		10:00 AM	<b>Student Presentations</b>	<b>FACULTY</b>
	Tu	8		5:00 PM	<b>Cellular Communication REVIEW</b>	<b>FACULTY</b>
10/08/14	W	8		9:00 AM	<b>NO CLASS</b>	
	W	8		10:00 AM	<b>NO CLASS</b>	
	W	8		4:00 PM	<b>Cellular Communication EXAM</b>	

## Foundation for Contemporary Biomedical Research 2 (BMS 793B)

### COURSE INFORMATION

#### Meeting Times and Classrooms:

Mon. – Fri.	9:00 – 9:50 A.M.	Lecture	HSC-N 4007
	10:00 – 10:50 A.M.	Lecture	HSC-N 4007

In general, there are lectures 4 days a week, but the days vary.

**Exam Reviews:** Designated day following final lecture at end of each Block.

TBA HSC-N 4007

**Examinations:** Designated day following Exam Review at end of each Block.

4:00 – 6:00 P.M. LC-1

#### Course Coordinators:

Dr. Michael Schaller  
 Dr. Scott Weed  
 Dr. Michael Mawhinney  
 Dr. Robert Brock

#### Block Leaders:

*Functional Significance of the Cytoskeleton – Drs. Mike Schaller & Scott Weed*  
*Innate Immunity, Inflammation & Cellular Microbiology – Drs. Christopher Cuff & Joan Olson*  
*Integrated Neurobiology – Dr. Mike Mawhinney*  
*Metabolic Homeostasis – Drs. Brad Hillgartner & Bob Goodman*

**Grading:** Examinations – 85% Student Presentations – 15%

A traditional numerical scoring system will be used as a basis to generate a final letter grade:

**100% – 90% = A      80% – 89% = B      70% – 79% = C      60% – 69% = D      59% or less = F**

The actual grading scale may differ somewhat from the traditional 90-80-70 grading scale, at the discretion of the faculty in the course. However, scores exceeding 90% will receive an A, scores from 80-90% are guaranteed a minimum grade of B, and scores under 60% will receive a maximum grade of C.

#### **Examinations (85%):**

Examinations will be weighted equally and questions drawn from both lecture presentations as well as any additional resources as assigned by instructors. Exams are scheduled **at 4:00pm in LC-1. The location of the final exam has not been scheduled.**

<b>EXAM 1:</b> October 24, 2014	(Lectures #57 through #70)
<b>EXAM 2:</b> November 10, 2014	(Lectures #71 through #86)
<b>EXAM 3:</b> November 20, 2014	(Lectures #87 through #98)
<b>EXAM 4:</b> December 12, 2014	(Lectures #99 through #112)

**Student Presentations (15%):**

To foster cooperative learning and an in-depth study of a particular topic of interest, students will be responsible for participating in a group presentation on a block-relevant issue. Each group will consist of 3 – 4 students and the presentation should last about 15 minutes. Presentations will be graded for their content, the quality of preparation, and the extent to which the presentation engages the class in a meaningful discussion. Each group member is expected to contribute to the presentation.

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**Policy Regarding Make-up Examinations**

The student should notify the course coordinators to make arrangements for a make-up exam if he/she is not going to be able to take an examination during the scheduled time. The make-up must be taken within one week of the scheduled exam period, or before the exam, if appropriate. Any exceptions must be approved by all of the course coordinators and the Instructors whose material is being examined.

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Should you have any questions about possibly improper research citations or references, or any other activity that may be interpreted as an attempt at academic dishonesty, please see me before the assignment is due to discuss the matter.

---

**Course Objectives/Learning Outcomes:**

The purpose of this course is to impart a fundamental understanding of the functional components of a cell, and the basis for regulation of cellular processes and organ systems. The knowledge base is developed in an interactive faculty-student environment that requires interpretation and rational speculation to apply general concepts to specific situations and stimulate creative scientific thought.

**Objectives**

- Impart a fundamental knowledge base
- Integrate molecular, cellular and physiological concepts
- Illustrate relevance through clinical examples
- Illustrate current relevance via the literature
- Stimulate student engagement and critical thinking

Assessable skills

- Understand important concepts, their significance and illustrate mastery of with examples.
- Apply the conceptual principles discussed to novel situations.
- Design and interpret experiments to test molecular, cellular and physiological mechanisms.
- Verbally articulate understanding of concepts during scientific discussion(s).
- Demonstrate teamwork and problem solving.

Date	Day	Wk	Lecture #	Time	Title/Topic	Leader/Lecturer
<b>Functional Significance of the Cytoskeleton - Blockleader = Schaller/Weed</b>						
10/09/14	Th	8	57	9:00 AM	The Cytoskeleton - Microfilaments and Intermediate Filaments	<b>Weed/Schaller</b>
	Th	8	58	10:00 AM	The Cytoskeleton - Microtubules	<b>Schaller</b>
10/10/14	F	8	59	9:00 AM	Cytoskeletal Dynamics	<b>Weed/Schaller</b>
	F	8	60	10:00 AM	Bacterial Pathogenesis and the Cytoskeleton	<b>Olson</b>
10/11/14						
10/12/14						
<b>10/13/14</b>	M				<b>Fall Break recess</b>	
	M				<b>Fall Break recess</b>	
<b>10/14/14</b>	Tu				<b>Fall Break recess</b>	
	Tu				<b>Fall Break recess</b>	
10/15/14	W	9	61	9:00 AM	Cytoskeleton as target for drugs (pharmacology)	<b>Mawhinney</b>
	W	9	62	10:00 AM	ECM and cell adhesion - structure	<b>Schaller/Weed</b>
10/16/14	Th	9	63	9:00 AM	ECM and cell adhesion - functional significance	<b>Schaller/Weed</b>
	Th	9	64	10:00 AM	Molecular Motors - Movement and Contractility	<b>Schaller</b>
10/17/14	F	9	65	9:00 AM	Cytoskeletal Organization of specialized cells	
	F	9	66	10:00 AM	Development and Plasticity	<b>Berrebi</b>
10/18/14						
10/19/14						
10/20/14	M	10	67	9:00 AM	Somatic Muscle Contraction	<b>Stauber</b>
	M	10	68	10:00 AM	Efferent control of muscle function	<b>Stauber</b>
10/21/14	Tu	10	69	9:00 AM		<b>Stauber</b>
	Tu	10	70	10:00 AM	Malignant Transformation and metastasis	<b>Weed</b>
10/22/14	W	10		9:00 AM	<b>Student Presentations</b>	<b>FACULTY</b>
	W	10		10:00 AM	<b>Student Presentations</b>	<b>FACULTY</b>
	W	10		5:00 PM	<b>Cytoskeleton REVIEW</b>	<b>FACULTY</b>
<b>Innate immunity &amp; inflammation - Blockleader = Cuff</b>						
10/23/14	F	10	71	9:00 AM	Inflammation and Innate Immunity	<b>Cuff</b>
	F	10	72	10:00 AM	The Nature of Antigens/Antibody Structure	<b>Cuff</b>
10/24/14	Th	10		9:00 AM	<b>NO CLASS</b>	
	Th	10		10:00 AM	<b>NO CLASS</b>	
	Th	10		4:00 PM	<b>Cytoskeleton EXAM</b>	
10/25/14						
10/26/14						
10/27/14	M	11	73	9:00 AM	Antibody Function/Generation of Diversity	<b>Cuff</b>
	M	11	74	10:00 AM	Major Histocompatibility complex/Antigen Processing/T-Cell Development	<b>Cuff</b>
10/28/14	Tu	11		9:00 AM	<b>Student Presentations</b>	<b>Cuff</b>

Date	Day	Wk	Lecture #	Time	Title/Topic	Leader/Lecturer
	Tu	11		10:00 AM	<b>Student Presentations</b>	<b>Cuff</b>
	Tu			12:00 noon	Dept of Biochemistry Seminar Dorothy Schafer - University of Virginia	
10/29/14	W	11	75	9:00 AM	Humoral Immune Responses/Monoclonal Antibodies	<b>Cuff</b>
	W	11	76	10:00 AM	Infectious Disease Immunity Using Mice	<b>Schafer</b>
10/30/14	Th	11	77	9:00 AM	Hypersensitivity	<b>Schafer</b>
	Th	11	78	10:00 AM	Tolerance and Autoimmunity	<b>Schafer</b>
<b>Cellular Microbiology - Blockleader = Microbiology</b>						
10/31/14	F	11	79	9:00 AM	Bacterial-host interaction & pathogenesis	<b>Olson</b>
	F	11	80	10:00 AM	Bacterial secretion processes	<b>Olson</b>
11/01/14						
11/02/14						
11/03/14	M	12		9:00 AM	<b>NO CLASS</b>	
	M	12		10:00 AM	<b>NO CLASS</b>	
11/04/14	Tu	12	81	9:00 AM	Life of intracellular bacteria	<b>Olson</b>
	Tu	12	82	10:00 AM	Emerging pathogens	<b>Olson</b>
11/05/14	W	12	83	9:00 AM	Microbes & cancer	<b>Olson</b>
	W	12	84	10:00 AM	Role of our microbiome in health & disease	<b>Olson</b>
11/06/14	Th	12	85	9:00 AM	Man vs microbes - antibiotics	<b>Mawhinney??</b>
	Th	12	86	10:00 AM	Microbes vs man - antibiotic resistance	<b>Olson</b>
11/07/14	F	12		9:00 AM	<b>Student Presentations</b>	<b>FACULTY</b>
	F	12		10:00 AM	<b>Student Presentations</b>	<b>FACULTY</b>
	F	12		5:00 PM	<b>Immunology &amp; Microbiology REVIEW</b>	<b>FACULTY</b>
11/08/14						
11/09/14						
11/10/14	M	13			<b>NO CLASS</b>	
	M	13			<b>NO CLASS</b>	
	M	13		4:00 PM	<b>Immunology &amp; Microbiology EXAM</b>	
<b>Integrated Neurobiology - Blockleader = Mawhinney</b>						
11/11/14	Tu	13	87	9:00 AM	Organization of the Nervous System/History of Neuroscience	<b>Berrebi</b>
	Tu	13	88	10:00 AM	Foundations of Behavior/Learning & Memory	<b>Schreurs</b>
11/12/14	W	13	89	9:00 AM	Alzheimer's	<b>Schreurs</b>
	W	13	90	10:00 AM	Sensory Neuroscience I: Hearing, Vision or Olfaction	<b>Berrebi</b>
11/13/14	Th	13	91	9:00 AM	Sensory Neuroscience I: Hearing, Vision or Olfaction	<b>Berrebi</b>
	Th	13	92	10:00 AM	Plasticity	<b>Berrebi</b>
11/14/14	F	13	93	9:00 AM	Pain	<b>Dey</b>

Date	Day	Wk	Lecture #	Time	Title/Topic	Leader/Lecturer
	F	13	94	10:00 AM	CNS Inflammation	Konat
11/15/14						
11/16/14						
11/17/14	M	14			<b>NO CLASS</b>	
	M	14			<b>NO CLASS</b>	
11/18/14	Tu	14	95	9:00 AM	Parkinson's Disease	
	Tu	14	96	10:00 AM	Schizophrenia	
11/19/14	W	14	97	9:00 AM	Autonomic (Adrenergic) Nervous System/Blood Pressure	<b>Mawhinney</b>
	W	14	98	10:00 AM	Autonomic (Cholinergic/Nitrergic) Nervous System	<b>Mawhinney</b>
11/20/14	Th	14		9:00 AM	<b>Student Presentations</b>	<b>FACULTY</b>
	Th	14		10:00 AM	<b>Student Presentations</b>	<b>FACULTY</b>
	Th	14		5:00 PM	<b>Integrated Neurobiology REVIEW</b>	<b>FACULTY</b>
11/21/14	F	14		9:00 AM	<b>NO CLASS</b>	
	F	14		10:00 AM	<b>NO CLASS</b>	
	F	14		4:00 PM	<b>Integrated Neurobiology EXAM</b>	
11/22/14						
11/23/14						
11/24/14					<b>THANKSGIVING BREAK</b>	
11/25/14					<b>THANKSGIVING BREAK</b>	
11/26/14					<b>THANKSGIVING BREAK</b>	
11/27/14					<b>THANKSGIVING BREAK</b>	
11/28/14					<b>THANKSGIVING BREAK</b>	
11/29/14						
11/30/14						
<b>Metabolic Homeostasis - Blockleader = Hillgartner/Goodman</b>						
12/01/14	M	15	99	9:00 AM	Etiology of Type 1 diabetes	<b>Cuff</b>
	M	15	100	10:00 AM	Etiology of type 2 diabetes 1	<b>Hillgartner</b>
12/02/14	Tu	15	101	9:00 AM	Etiology of type 2 diabetes 2	<b>Hillgartner</b>
	Tu	15	102	10:00 AM	Etiology of type 2 diabetes 3: Control of food intake & obesity	<b>Hileman</b>
12/03/14	W	15	103	9:00 AM	Pathogenesis: physiology & biochemistry of hyperglycemia	<b>Goodman</b>
	W	15	104	10:00 AM	Pathogenesis: Microcirculation 1	<b>Frisbee</b>
12/04/14	Th	15	105	9:00 AM	Pathogenesis: Microcirculation 2 & Atherosclerosis	
	Th	15	106	10:00 AM	Pathogenesis: Atherosclerosis	<b>Siderovski</b>
12/05/14	F	15	107	9:00 AM	Control of intermediary metabolism 1: physiology of insulin	<b>Goodman</b>
	F	15	108	10:00 AM	Control of intermediary metabolism 2: counter regulatory hormones	<b>Goodman</b>
TBA	TBA				Dept of Physiology & Pharmacology Seminar Francis Willard - Eli Lilly	
12/06/14						
12/07/14						

Date	Day	Wk	Lecture #	Time	Title/Topic	Leader/Lecturer
12/08/14	M	16	109	9:00 AM	Control of intermediary metabolism 1: biochemical effects of insulin	Hillgartner
	M	16	110	10:00 AM	Control of intermediary metabolism 1: biochemical effects of glucagon	Hillgartner
<b>12/09/14</b>	Tu	16	111	9:00 AM	Treatment of diabetes 1	Ponte
	Tu	16	112	10:00 AM	Treatment of diabetes 2	Ponte
<b>12/10/14</b>	W				<b>PREP DAY FOR FINALS</b>	
12/11/2014	Th				<b>Student FINAL Presentations</b>	<b>FACULTY</b>
	Th				<b>Student FINAL Presentations</b>	<b>FACULTY</b>
	Th				<b>Metabolic homeostasis REVIEW</b>	<b>FACULTY</b>
12/12/2014	F			4:00 PM	<b>Metabolic homeostasis EXAM</b>	

**Other topics/lectures that might be incorporated**

Pharmacokinetics & receptor interaction  
Prions  
Female Reproduction



## **ADTP: Studies in Biomedical Sciences – BMS 791B**

You will have the option of opting out/testing out of portions of the Foundation courses and substituting independent study with a faculty investigator. If you feel there is overlap in these courses with previous courses you have taken, please provide the appropriate supportive evidence/records at Boot Camp. You will have the opportunity during Boot Camp to discuss substituting independent study for portions of the Foundations course with your faculty Boot Camp advisor. You will then have to register for the appropriate number of credits for BMS 791B. Before Boot Camp, faculty will review your transcript(s) to identify potential advisors and evaluate further your academic record.

## Cellular Methods – BMS 706

*Fall 2014*

*Location: 301 BMRC Friday 11:00 am – 12:30 pm*

### Course Coordinators

Dr. Lisa Salati

Office: Rm 3096 HSN

Telephone number: 293-7759

Email: [lsalati@hsc.wvu.edu](mailto:lsalati@hsc.wvu.edu)

Abby Myers

Office: 3<sup>rd</sup> Floor BMRC

Email: [akmyers@hsc.wvu.edu](mailto:akmyers@hsc.wvu.edu)

Ashley Petrone

Office: 1<sup>st</sup> Floor BMRC

Email: [abpetrone@mix.wvu.edu](mailto:abpetrone@mix.wvu.edu)

### Course Description

Cellular Methods meets once a week on Friday from 11:00 AM to 12:30 PM. This course serves as a complement to the BMS 705: Cellular Structure and Metabolism course. During the course of the semester students will be exposed to a variety of methodologies utilized in addressing research questions in the laboratory setting. Senior graduate students in the Biomedical Sciences program will present weekly research questions, and describe techniques well suited to study the biological phenomenon under scrutiny.

### Course Goal

The goal of this course is to familiarize the first year Biomedical Sciences students with the most current technologies found in the literature. Additionally, students will develop the critical thinking skills required to evaluate data and begin to synthesize an experimental design for a research project directed at a novel research question.

### Objectives

*The students will be able to:*

- Recognize, evaluate, and interpret data generated through various techniques
- Compare and contrast available techniques that are best suited for addressing a particular research inquiry
- Be cognizant of the limitations of those techniques
- Construct a set of experiments sufficient to examine a particular biological phenomenon

### Recommended Textbook

*At the Bench: A Laboratory Navigator* by Kathy Barker

### Assignments

#### *Reading Assignments*

Readings for the week can be found on the schedule and come from the recommended text. Additional readings such as, journal articles, will be posted on the Sole site in the appropriate week's folder.

#### *Weekly Homework Assignments*

Homework assignments will be posted on Sole and will be due by the next class period. Each homework assignment is worth 5 points.

### *Classroom Assignments*

Each week students are required to participate in classroom activities. These can range from journal article discussions to activities based on that week's lesson. Participation/attendance is worth 10 points/class.

### Grading

Grading for this course is pass/fail. This course is based on a 200 total points. To pass a student must achieve a 75% or higher or 150 points or higher.

**Attendance/Participation: 10 points x 15 weeks = 150 points**

**Homework: 5 points x 10 weeks = 50 points**

**200 total course points**

### Course Policies

#### *Attendance and Tardiness*

Students are required to attend all classes, lab periods, group activities, and exams. If a student is absent, without a valid excuse, students will receive no points for the activities completed on that day. Please remember that each member of a class (and group) is important and each student brings their own ideas to the table to share. If a class is missed, so are a student's ideas. **(10 points X 15 weeks = 150 points total)**

#### *Course Concerns/Feedback*

If at any point during the semester students have concerns about the material or the structure of the course they may email the course coordinators at any time. Comments and feedback on the course are very welcome and encouraged. We want to make sure everyone is able to understand and keep up with the material.

#### *Classroom Etiquette*

- Respect is an important part of our classroom. Students will interact in a professional manner as they would if they were working in a professional setting.
- Students will be quiet, polite, and courteous when others are talking or presenting their work.
- Students will provide constructive and positive feedback to their peers.

#### *Technology Use*

- The use of computers and tablets is encouraged for classroom activities.
- Cell phones must be silenced during class as to not disrupt others.
- Talking on cell phones during class is prohibited (if a student must take a call, they should exit the room until their call is done)

### Groups

#### *Group 1*

Abukabda Alaeddin  
Jessica Allen  
Raymond Anderson  
Katherine Roach

#### *Group 2*

Michelle Bedenbaugh  
Lindsey Bishop  
Dylan Boehm  
Anton Sobinov  
Tiffany Petrisko

#### *Group 3*

Tanya Dilan  
Joshua Gross  
Russell Hardesty  
Grant O'Connell  
Keyana Porter

#### *Group 4*

Skye Hickling  
Tiffany Kornberg  
Kristina Marinak  
Tiffany Thibaudeau

### Support Services

Ecampus and technical support is available from the Office of Information Technology's Help Desk which can be reached at 304-293-4444 or [oithelp@mail.wvu.edu](mailto:oithelp@mail.wvu.edu). Be prepared to provide your WVU Identification Number, also known as your 700 number.

Information about WVU's Office of Disability Services' can be obtained from <http://disabilityservices.wvu.edu/>

Information about WVU's Academic Support Services can be obtained from [http://retention.wvu.edu/academic\\_resource\\_centers](http://retention.wvu.edu/academic_resource_centers)

Information about WVU's Student Support Services can be obtained from <http://sss.wvu.edu/>

### Academic Integrity

*"The integrity of the classes offered by any academic institution solidifies the foundation of its mission and cannot be sacrificed to expediency, ignorance, or blatant fraud. Therefore, I will enforce rigorous standards of academic integrity in all aspects and assignments of this course. For the detailed policy of West Virginia University regarding the definitions of acts considered to fall under academic dishonesty and possible ensuing sanctions, please see the Student Conduct Code at [http://studentlife.wvu.edu/office\\_of\\_student\\_conduct/student\\_conduct\\_code](http://studentlife.wvu.edu/office_of_student_conduct/student_conduct_code). Should you have any questions about possibly improper research citations or references, or any other activity that may be interpreted as an attempt at academic dishonesty, please see me before the assignment is due to discuss the matter."*

### Inclusivity Statement

*"The West Virginia University community is committed to creating and fostering a positive learning and working environment based on open communication, mutual respect, and inclusion."*

### Guidelines for Absences Due to Military Service Requirement

*"In accordance with the "Veteran Friendly" designation, WVU faculty may allow students who are members of the US Armed Forces (including the National Guard and Active Reserve) to make up tests and assignments that are missed during a semester if the student is officially called up for military service requirements for a limited period; and if the delayed coursework completion will not irreversibly impact the students' ability to appropriately master the required subject matter. Absence due to required military obligation should not exceed a cumulative amount of three weeks, and the students should follow the appropriate protocol."*

Week	Date	Lecture	Techniques/Activity	Lecturer	Technical Experts	Reading
1	8/22	Introduction Lab Equipment	Syllabus Unwritten Rules of Lab Show equipment	Abby Ashley	None	Ch 1-5
2	8/29	Cell Culture Cell/Tissue Processing Cell models	Sterile culture Centrifugation/ Fractionation Media and growth conditions	Bryan Gall Danielle	Hollander	Ch 9, 10, 14
3	9/5	Cellular Imaging/ Visualization	Microscopy Immunohistochemistry Morphological staining Viability Staining	Abby	Karen Martin	Ch 16
4	9/12	Flow Cytometry/FACS	Visit flow core Brundage discussion	Brian M.	Brundage Elliott	
5	9/19	Measuring Gene Expression	RNA Isolation Northern Blot PCR (RT, real-time) Microarray RNA sequencing	Ashley	Salati	Ch 12 - pg 296-299
6	9/26	Manipulating Gene Expression	Plasmids/Vectors Site-Directed Mutagenesis siRNA microRNA	Jamie Barr	Martinez	
7	10/3	Protein Identification	Protein Purification Mass Spectroscopy NMR	Brian Train	Gannett Gunther	Ch 12 - pg 299-307 Ch 15
8	10/10	Protein Interactions/ Binding	Gel mobility shift Immunoprecipitation FRET/FRAP	Ka Hong Jessica Hall	Stoilov Hillgartner	
9	10/17	Animal Models	Choosing an animal model	ONLINE	None	
10	10/24	Animal Protocols	Animal handling training in OLAR	Ashley	Whimsatt	
11	10/31	Transgenic Animals	Knockout Over/Underexpression Plasmids/Vectors Breeding	Cody	Mathers	
12	11/7	Animal Surgeries/ Procedures	Surgical Conditions Drug Treatment/Delivery Live imaging Behavioral Testing	Steve Brooks Liz	Post-docs Lab techs	
13	11/14	Human Research	IRB and procedures Human research at WVU Limitations	Paula Ashley Erienne Sara	Barr Lewis Vona-Davis	
14	11/21	Program-Specific Literature Presentations		Abby Ashley		

## Discussions on Scientific Integrity – BMS 700

Fall semester, 1 credit (P/F)

Course Coordinators: Fred L. Minnear and Daniel Vasgird

Time: Tuesdays from 12:00 pm to 1:30 pm; Room: 201 Erma Byrd

Text: In library – Francis Macrina, *Scientific Integrity*, 3<sup>rd</sup> Edition

<u>Date</u>	<u>Topic</u>	<u>Faculty</u>
Aug 26	<b>Research Misconduct</b> <i>Philosophy background, ethics and morals, definitions</i>	<b>Vasgird</b>
Sep 2	<b>Plagiarism</b> <i>Definition, what constitutes</i>	<b>Mathers</b>
Sept 16	<b>Mentoring</b> <i>Responsibilities of mentor, mentored student or postdoc, issues</i>	<b>Minnear</b>
Oct 7	<b>Confidentiality with Datasets</b> <i>Use &amp; protection of patient data, accessing health records</i>	<b>Hulsey</b>
Oct 21	<b>Conflict of Interest</b> <i>Financial, time, personnel, students, ... Federal definitions</i>	<b>Edwards</b>
Oct 28	<b>Intellectual Prop &amp; Data Ownership</b> <i>Ownership, Patents, trademarks, copyright</i>	<b>Dey</b>
Nov 11	<b>Human Research Protections</b> <i>Early public health cases</i>	<b>Vasgird</b>
Nov 18	<b>Ethical Issues in Clinical Investigation</b> <i>Institutional Review Board (IRB)</i> <i>Application process; practical issues – review cases</i>	<b>Davis</b>
Dec 2	<b>Animal Research Protections</b> <i>Federal regulations, philosophy</i>	<b>Wimsatt</b>
Dec 9	<b>Authorship &amp; Peer Review</b> <i>Reviewing papers, proposals; publishing and responsibilities</i>	<b>Frisbee</b>
	<b>Collaborative Research</b> <i>Where, when, what, how, who</i>	<b>Dillon</b>
	<b>Wrap-up session</b>	<b>Vasgird/Minnear</b>

### Activities

1. Reading assignment before each session is the appropriate chapter from Macrina (copies in the library). Assignments/case studies will be posted on SOLE.
2. At the beginning of each session, the faculty facilitator will present (10-15 min) information pertinent to the topic.
3. One way of analyzing the case studies is to use the four-point concept developed by Muriel J. Bebeau, University of Minnesota. *Moral Reasoning in Scientific Research: Cases for Teaching and Assessment*. December 1995. Indiana University, (<http://poynter.indiana.edu/files/8713/4572/7960/mr.pdf>):
  - (1) issues and conflicts,
  - (2) interested parties,
  - (3) consequences (for each party),
  - (4) obligations (of protagonist toward each party).

Trainees taking the course will include first-year students from the biomedical and public health programs and may also include some faculty, postdoctoral fellows, and some students beyond the first year of training.

## **Short Lab Experience – BMS 791A**

Fall and Spring Semesters

Coordinators

**Drs. Fred L. Minnear and Scott Weed**

**NOTE:** you are required to spend a minimum of 20 hours a week in lab rotations.

### Objectives

There are four main objectives for the short lab experience:

1. To aid in choosing a laboratory for your dissertation research
2. To learn the research area of other laboratories in the Health Sciences Center so that you can interact scientifically with the members of that laboratory
3. To aid you in selecting faculty members for your dissertation committee.
4. To learn techniques involved in research.

### Research Profile of Available Mentors

Before Boot Camp, you will receive a booklet of one-page research profiles of the available faculty. Please be prepared to identify at least three faculty with whom you would like to conduct a short lab experience during Boot Camp and before the first rotation starting August 25.

### Matching with a Rotation Mentor

Before each of the three, short lab experiences in the fall semester, we will ask you to submit three names of faculty (rank order) with whom you would like to rotate with. While you will most likely receive your first choice, we reserve the option to match you with your second or third choice based on competition with other first-year students for the same faculty mentor and research interests.

### Schedule

During the 1<sup>st</sup> semester of Year 1, you will do three short lab experiences of 4 weeks each. The schedule for these rotations is as follows:

- 1<sup>st</sup> experience - August 25 to September 19
- 2<sup>nd</sup> experience - September 29 to October 24
- 3<sup>rd</sup> experience - November 3 to December 5

If you have not matched with a dissertation mentor by December/January of Year 1, you will conduct rotations during the spring semester until a match is finalized. Please discuss with your rotation mentor about conducting research during University spring break (March 21 to March 29 (Saturday to Sunday)).

Before the start of each lab experience, you should meet with the faculty member and set up a daily work schedule. At this time, you may also receive additional materials to read in preparation for your experiments. Remember, faculty members have other obligations - do not wait until the last minute to meet with them.



### How to choose your rotations

During Boot Camp and week of August 18, you will have the opportunity to meet with the faculty and learn about their research. This will be accomplished by visiting research labs. Please discuss rotation projects and dissertation possibilities with available faculty if you are interested in rotating in their laboratory. During the week of August 18, you will submit to Dr. Minnear the names of three faculty members with whom you would like to rotate during the first rotation. You will receive notification of your assignment for the first rotation before the end of the week. Half-way between each short lab experience you will be asked to once again submit three names for the next short lab experience. This schedule allows you to continue to explore your interests throughout the first and, if necessary, the second semester of the first academic year.

**NOTE:** Usually only one student will rotate in any given laboratory during each rotation. There may be an exception or two. Some faculty may host two students at a time.

**NOTE:** Due to time constraints with obtaining security clearance for rotations at NIOSH, please indicate your desire to do a short lab experience before or shortly after arriving at WVU.

**REMEMBER:** You must submit a security clearance form before conducting a rotation or dissertation research at NIOSH. It takes time to obtain a security clearance at NIOSH. Please be aware that a dozen or more people at NIOSH and CDC are involved in the submission and approval processes. Therefore, NIOSH staff request that only those students who are really interested in the research faculty at NIOSH submit this form. If you are seriously considering doing research at NIOSH, you will need to talk to NIOSH faculty for the proper form.

### Expectations

During the laboratory rotation, you will be expected to

- keep a regular work schedule in the laboratory,
- spend at least 20 hours per week in the laboratory, and
- read the literature pertinent to that laboratory.

By the end of the rotation, you should

- know what the major questions are for that laboratory,
- explain how your work fits into the goals of the laboratory,
- describe the assays you did including knowing the purpose for all steps and reagents,
- appropriately interpret your data, and
- know what the major pitfalls are in arriving at these interpretations.

**NOTE:** The questions for the qualifying examination, which occurs at the end of Year 1, for students in Cancer Cell Biology are written and graded by the faculty with whom you conducted your research rotations.

**NOTE:** Inform your rotation mentor of exams that will alter your schedule; however, you are not to forgo laboratory work in the days before the exam in order to prepare for the exam. Expectations of the faculty are that you will use evenings and weekends for studying and that you will remain up-to-date in your coursework to prevent the need to cram before exams.

**IMPORTANT:** You are to leave your laboratory notebook with the laboratory at the end of the short lab experience. The laboratory notebook(s) is the property of the laboratory. It should not leave the laboratory at any time. With permission of the laboratory mentor, you may make copies of the notebook for your personal use. Paper and notebooks for this purpose will be provided to you by each of the laboratories. The laboratory notebook should document your activities in sufficient detail so that your experiments can be repeated without your consultation.

### Grading

Laboratory experiences are graded A, B, or C and include a narrative evaluation of your strengths and weaknesses by the rotation mentor.

The criteria for assigning a letter grade include keeping a regular work schedule as agreed upon at the start of the rotation, enthusiasm for research, understanding the research questions addressed by the laboratory, excellent work-ethic, reading the literature relevant to the laboratory research, conducting experiments in an appropriate and timely manner, analyzing the data, maintaining records in your laboratory notebook of the experimental procedures and outcomes, summarizing and discussing results in the form of figures, tables, and text, and interacting well with others in the laboratory.

If you fulfill these criteria, you deserve an A. If you satisfy most of these criteria, you deserve a B, and if you do not perform up to these expected standards, you will receive a C. A grade of B or C is probably an indication that the faculty mentor is not interested in accepting you into the laboratory. A grade of C in graduate studies is considered failing, in practical terms.

During each lab experience, you will regularly attend seminars and a journal club pertinent to the work in the laboratory or approved by the laboratory mentor. The letter grade for the lab experience includes active participation in a journal club.

**NOTE:** At the end of the lab experience, your rotation mentor will give you a letter grade and write an assessment/evaluation of your performance. He/she will discuss this with you, and both you and your mentor will sign and date the \*evaluation form. **(\*Which can be found in the back of the handbook.)**

**NOTE:** At the end of each short lab experience, you are required to write a one-page summary of your research activities. These summaries are to be submitted, electronically, to the Office of Research and Graduate Education. It is also requested that you present a 10-min talk about your lab experience to your lab members. This is a great opportunity to begin to learn to publicly present your research findings and experiences.

### How to choose your Ph.D. dissertation mentor/laboratory

You will have the opportunity to select a faculty mentor and graduate program by December or May of Year 1. We will ask you at these times to provide a list, in rank order, of three faculty mentors with whom you would like to conduct dissertation research. Please note that acceptance into a laboratory must be by mutual consent of you and that faculty member and that the faculty member has the final say. In some cases, a faculty member's schedule may change and thus they may no longer be willing to take on a student. This decision should not be taken personally.

Alternatively, if you have yet to find a laboratory that meets your interests, you can choose to do an additional lab experience during the first half of the summer session. This should be discussed with the Assistant VP for Graduate Education. Additional short lab experiences beyond the Year 1 summer semester are discouraged because of the delay in embarking on your dissertation research.

**NOTE:** Both you and the faculty hosting you during a short lab experience should not formalize any commitment before the end of the fall semester, unless you have already matched with a mentor. If you think you know the lab you want to enter, choose other lab experiences to enhance your skill set for the type of dissertation work you want to do. All graduate dissertation advisory committees have 5 faculty members on them. The lab experiences are extremely valuable for helping you choose these members. Be aware that the faculty will discuss possible dissertation projects with you; this does not mean that they are accepting you into their laboratory at that time. It is appropriate, however, to ask a faculty member if they were happy with your performance and willing to consider you for their laboratory. Again this should not be construed as a formal commitment. If you have any questions, please contact the Assistant VP for Graduate Education.

**REMEMBER:** It is a requirement to match with a faculty mentor who will guide you to completion of your PhD dissertation research. You are responsible to find/match with a faculty mentor. Lack of fulfillment of this requirement may lead to dismissal from the IGPBMS.

### Criteria to be an Available Mentor

To mentor a student the faculty investigator should:

1. Want to mentor a new student in his/her laboratory
2. Have extramural funding to support the student's stipend or the demonstration of submitted and pending grant applications within the past year
3. Have an active research laboratory as identified by research supply money and recent (within the past year) publications.

Other considerations taken into account when assigning student mentorship:

1. Association (participating faculty mentor) with Institutional Fellowship Opportunities, such as NSF IGERT, NanoSafe, WVCTSI, NIH T32 Behavioral and Biomedical Training Grant
2. Student supported by a Teaching Assistantship (TA)
3. Number of current students in the investigator's laboratory

## Core Curriculum – Year 1 – Spring Semester

Spring Semester – January 12 – May 1; final exam week May 4 – 9

Second semester begins the second week of January and ends with finals week, the first full week in May. For some students, this semester begins with program-specific coursework upon selection of a mentor and dissertation specific research. In the spring semester, each graduate program offers a course appropriate for first year students that contains program-specific content. These courses are:

<b>Course</b>	<b>Credits</b>	<b>Graduate Program</b>
BMS 715, Molecular Biology	3	Biochemistry and Molecular Biology
BMS 730, Cancer Cell Biology	3	Cancer Cell Biology
PSIO 793, Introduction to Physiological Systems & Disease		Cell & Integrative Physiology
BMS 736, Immuno/Microbial Pathogenesis	3	Immunology & Microbial Pathogenesis
BMS 738, Muscle Structure/Function	2	Exercise Physiology
Neurobiology 1	TBA	Neurobiology
PHAR 779, Drug Discovery/Development	3	Pharmaceutical & Pharmacological Sciences

For students who have selected a graduate program, that program will provide guidance on the required course or courses to take. Students who have not yet selected a mentor and graduate program will do additional 4-week lab experiences until a mentor is chosen. They should attend journal clubs and seminars with the students in their host laboratory. Coursework for students who do not yet have a mentor should reflect programs that they would most likely enter.

## Core Curriculum – Year 1 – Summer Semester

Most likely you will take 3 credits of research during your first summer semester. If you have transitioned into a program in December/January, please register for research 797 using your program code. If you transitioned in May or later, please register for BMS 797, as it will take time for the transition process. Beyond your first summer, you will register for research 797 using your program code.

<u>Courses</u>	<u>Credit Hours</u>
Research 797	3
<hr/>	
TOTAL CREDITS	3

## Scientific Writing – BMS 720

Summer: Year 2 of training – Wednesday at 1:00 in room 2094 HSN

Course Coordinator: Bernard Schreurs

### Purpose – Part I

**The purpose of the first part** of the Scientific Writing course is to introduce students to scientific writing using a standard journal format and a simple set of data. Students may use their own data or a sample data set that will be provided to write a paper based on the format used in the Journal of Neuroscience. Although, not all students will submit manuscripts to this journal, it provides a relatively straightforward structure and format that can be generalized to other journals. **The background, details, methods, and data analysis in the paper will come from the student's own research area and will be evaluated by their mentor.**

### Goal

Following the class, the student should know how to write a journal article that includes an Abstract, Introduction, Methods section, Results, Discussion, Reference list and Figure(s).

### Class

Class meets for 50 minutes every Wednesday at 1:00 in 2094 HSN.

### Text

There is a wealth of material available on how to write a scientific paper. However, there is no required text for this course. Here is a list of the books I have looked at:

Barrass, Robert. (2002). Scientists Must Write: 2<sup>nd</sup> Edition. Routledge. ISBN 0415269962.

Day, Robert A. (2006). How To Write & Publish a Scientific Paper: 5th Edition. ISI Press. ISBN 0313330409.

Hoffman, Angelika, H. (2010). Scientific Writing and Communication. Oxford University Press. ISBN 9780195390056.

Katz, Michael, J. (2009). From Research to Manuscript: A Guide to Scientific Writing. Springer Science. ISBN 9781402094668.

Matthews, J.R., & Matthews, R.W. (2007). Successful Scientific Writing. 3<sup>rd</sup> Edition. Cambridge University Press. ISBN 9780521699273.

\* Zeiger, Mimi. (2000). Essentials of Writing Biomedical Research Papers. 2<sup>nd</sup> Edition. McGraw-Hill. ISBN 0071345442.

The last book in the list has exercises and is the most useful of the group (and the most expensive - \$54). There will be a copy in the Health Sciences Library on reserve.

### Online

There are a number of websites with advice on how to write scientific papers. I have not had time to evaluate them. One that is recommended is <http://owl.english.purdue.edu/owl/>

### Reference Management

You will also need some form of reference managing system for the class. This could be Reference Manager, EndNote (also EndNote web) or RefWorks which is web-based and supported by WVU libraries. RefWorks also has a library guide (Linda Blake) who you can IM or e-mail (<http://libguides.wvu.edu/profile.php?uid=7408>)

### Exercises and Assignments

Weekly exercises and assignments are due at the beginning of the following class.  
FINAL JOURNAL ARTICLE WRITING ASSIGNMENT DUE \_\_\_\_\_

### Grading: S/U

S: The minimum criteria for a grade of S indicate completion of the following:

- The manuscript is complete and the format is within the guidelines of an article published in the format of the Journal of Neuroscience.
- The manuscript contains appropriate material in each section - Introduction, Methods, Results, Discussion, References, Tables, Figures.
- The manuscript is deemed acceptable by the student's mentor.
- Exercises have been completed and submitted to the instructor.
- Except when excused, the student has attended every class.

U: A grade of U reflects two or more of the following:

- The manuscript is incomplete and the format is not within the guidelines of an article published in the format of the Journal of Neuroscience.
- The manuscript contains inappropriate material in a section - e.g., Methods in the Results section.
- The manuscript is deemed unacceptable by the student's mentor.
- Exercises have not been completed or have not been submitted to the instructor.

**All exercises and assignments should be submitted by email to: [bschreurs@hsc.wvu.edu](mailto:bschreurs@hsc.wvu.edu)**

Due Date: The journal article is due by 5:00 p.m. – June 26, 2013/last day of class

## Purpose – Part II

**The purpose of the second part** of the Scientific Writing course is to introduce students to the grant writing process using a standard NIH predoctoral grant application format and a simple set of preliminary data. Students may use a sample data set, unless you have your own data, and write the scientific portion of a grant proposal based on the format used by the NIH for a Ruth L. Kirschstein National Research Service Award (NRSA) Predoctoral Fellowship (F31). **The scientific details in the grant application will come from the student’s own research area and will be evaluated by their mentor.**

## Goal

Following the class, students should know how to write the scientific components of an NIH Ruth L. Kirschstein National Research Service Award Predoctoral Fellowship Proposal that include:

- Project Summary/Abstract + Project Narrative
- Specific Aims
- Research Strategy
  - Significance
  - Approach
    - Research Design and Methods
    - Preliminary Data
- Bibliography and References Cited

## Textbook

There is a good deal of material available on how to write a grant proposal. However, there is no required textbook for this course.

If you do want a textbook for the course, I recommend:

Reif-Lehrer, L. (2005). “Grant Application Writer’s Handbook” 4th Edition, Jones and Bartlett Publishers, ISBN 0763716421.

A good deal of the material for the course will come from Reif-Lehrer (2005). A copy of the recommended text was available at the Circulation Desk in the Health Sciences Library. Of equal, if not more importance, for this part of the course are a number of official web sites.

## Web

The most important resource for grant applicants are the official web sites at the NIH –

<http://grants.nih.gov/>

The most important of these contains the Application AND Instructions for completing a grant application . . .

<http://apply07.grants.gov/apply/GetGrantFromFedgrants?opportunity=PA-11-111>

You get there through the program announcements for the awards themselves . . .

<http://grants.nih.gov/grants/guide/pa-files/PA-11-111.html>



There are also a number of unofficial grant application web sites maintained by scientific groups such as the online version of the journal Science

[http://sciencecareers.sciencemag.org/career\\_development](http://sciencecareers.sciencemag.org/career_development)

**Grading: S/U**

S: The minimum criteria for a grade of S indicate completion of the following:

- The scientific portion of the grant proposal is complete and the format is within the NIH guidelines.
- The grant proposal contains appropriate material in each section - Project Summary/Abstract + Project Narrative, Specific Aims, Research Strategy including Significance, Approach, and Bibliography and References Cited.
- The proposal is deemed acceptable by the student's mentor.
- Exercises have been completed and submitted to the instructor.
- Except when excused beforehand, the student has attended every class.

U: A grade of U reflects two or more of the following:

- The scientific portion of the grant proposal is incomplete and the format is not within NIH guidelines.
- The grant proposal contains inappropriate material in a section - e.g., Specific Aims in the Research Strategy.
- The proposal is deemed unacceptable by the student's mentor.
- Exercises have not been completed or have not been submitted to the instructor.

**All exercises and assignments should be submitted by email to: [bschreurs@hsc.wvu.edu](mailto:bschreurs@hsc.wvu.edu)**

**Due Date: The grant proposal is due the last day of class**

## Graduation Requirements

### Successful Completion of the Ph.D. Degree Requires:

1. 3.00 GPA and A's, B's, or S's in research
2. Proper registration and payment of fees
3. Passage of the
  - a. Qualifying Examination – by the end of Year 2 (see NOTE below).
  - b. Dissertation Proposal (candidacy exam) – by the end of Year 3, and
  - c. Dissertation Defense
4. First-Author manuscript
5. Submission of required Approval Forms: All forms are online at:
 

[www.hsc.wvu.edu/resoff/phdprograms/Biomedical-Sciences/pages/home/forms](http://www.hsc.wvu.edu/resoff/phdprograms/Biomedical-Sciences/pages/home/forms)

  - a. Dissertation Committee (Committee Approval Form)
  - b. Plan of Study
  - c. Qualifying examination
  - d. Dissertation proposal defense
  - e. Dissertation defense
  - f. Shuttle Request and Form
6. Electronic Submission of Dissertation
7. Application for Graduation and Diploma Form
8. Exit interview with Assistant VP for Graduate Education
9. Optional but encouraged – attendance at the Investiture for the School of Medicine or School of Pharmacy

### Registration

To receive a stipend, you are required to register for a minimum of 9 credits for the fall and spring semesters and 3 credits for the summer semester. Credit hours exceeding 16 require prior approval by the Associate Provost of WVU. Remember, fees must be paid before the start of each semester to avoid a penalty.

### Ph.D. Examinations and Defense

The three main examinations that must be passed for partial fulfillment of the Ph.D. degree are the qualifying examination, the research proposal (candidacy exam), and the dissertation defense. The individual graduate programs conduct these examinations.

#### Qualifying (comprehensive) Examination

The Qualifying Exam is usually given after most formal coursework has been completed. In general, the qualifying examination will test your scientific knowledge pertinent to your chosen PhD training program. The individual graduate programs conduct these examinations at different times and use different formats; please consult the rules and regulations of each of our seven PhD training programs. For example, the qualifying exam for Cancer Cell Biology (CCB) is conducted in the summer after Year 1 and tests your critical thinking skills and the knowledge that you acquired during your research laboratory experiences. Depending on the graduate program, the qualifying exam is scheduled either at the end of Year 1 (CCB) or Year 2 (B&MB, C&IP, I&MP, N, and P&PS) or in association with the proposal defense (EP). Upon completion of this exam, committee members sign the form, and you submit the form to your program and to the Office of Research and Graduate Education.

**NOTE:** If you fail the exam, you may have the opportunity to retake the exam one more time (two attempts permitted) after petitioning your qualifying exam committee for a retake.

### Dissertation Proposal Defense

Successful defense of a proposal outlining your dissertation research marks the entrance to PhD candidacy in your graduate program. Timely completion of this benchmark not only provides a guide for the remainder of your research but also provides an excellent springboard from which to apply for an external fellowship. The Proposal Defense begins with the preparation of a grant application, often times in the style of a National Institutes of Health (NIH) or American Heart Association (AHA) pre-doctoral fellowship. Portions of this grant application were drafted during the *Scientific Writing* course. The proposed research is presented in a formal seminar to the faculty, graduate students, and other interested people, followed by an oral defense of the proposal to your dissertation committee. It is recommended that the proposal be defended 6 to 9 months after passing the qualifying exam. If you fail the defense exam, you have the opportunity to retake the defense one more time after petitioning your dissertation committee for a retake. Successful defense of the research proposal must occur on or before the last working day of Year 3, which is usually the 3<sup>rd</sup> Friday in August. Failure to do so may lead to the loss of stipend support and/or dismissal from the IGPBMS. Individual graduate programs may require that the Dissertation Proposal Defense occur at an earlier date. With successful completion of the dissertation proposal, you have advanced to candidacy for the Ph.D. degree and also have started the 5-year clock for completion of the degree. HSC and University policy state that if you do not successfully defend your dissertation research within 5 years of reaching PhD candidacy, you must retake the Proposal Defense.

Before or usually after defense of the proposal, you should seek a fellowship from a national funding agency. Your Dissertation Proposal provides the cornerstone of an application for an individual pre-doctoral fellowship from agencies, such as the NIH (F31, F31 diversity) and the AHA. Successful defense of your Dissertation Proposal strengthens your ability to obtain a pre-doctoral fellowship because the research plan has received an internal critique. Examples of deadline dates for a Ruth Kirschstein NRSA F31 application to NIH are the first weeks of April, August, and December; the F31 diversity fellowship deadlines are the first weeks of May, September, and January. Deadlines for an AHA pre-doctoral fellowship are in January and July. Consult with your Graduate Director for other opportunities and their deadlines that are pertinent to your discipline.

**NOTE:** Successful defense of the research proposal must occur on or before the last working day of Year 3, which is usually the 3<sup>rd</sup> Friday in August. Failure to do so may lead to the loss of stipend support and/or dismissal from the IGPBMS.

### Dissertation Defense

You defend your dissertation research for the Ph.D. degree by writing a dissertation, presenting it orally in front of a public forum, and defending it in private to your dissertation committee. Your dissertation research must be original and make a contribution to the scientific literature. To pass, you must receive the approval of 4 of the 5 members on your committee. You are required to electronically submit the dissertation to the Electronic Thesis and Dissertation (ETD) program at WVU - <http://thesis.wvu.edu/>.

### First-Author Manuscript

You must have at least one First-Author manuscript, based on your Ph.D. dissertation research, published or accepted for publication in a peer-reviewed journal before you defend your dissertation

research. Please note that the order of authors in some chemical journals is different than in most biological journals. Therefore, it is important for you and your faculty mentor to identify that the content of the journal article is based on your dissertation research and that you are the primary author.

**NOTE:** The First-Author requirement is only a partial requirement of dissertation research. Dissertation research requires completion of an original research project. Original research is defined as obtaining original data that makes novel and important contributions to knowledge in the broad field of biomedical sciences.

### **Approval Forms:**

#### Dissertation Committee (Committee Approval Form)

The Dissertation Committee can serve as a testing committee, examining you during the qualifying exam, proposal defense, and dissertation defense, and as a research committee assisting the dissertation mentor with guiding you through the research portion of your PhD training. You and your mentor should organize and meet with this committee in Year 2. This committee should consist of no fewer than five graduate faculty members, the majority of whom must be graduate faculty with regular status, including the dissertation mentor (chair). One member should have a primary appointment in a department or be affiliated with a graduate program outside of yours. No more than one person may be a nonmember of the graduate faculty. Please note that a committee member from another institution has associate graduate membership status. The dissertation mentor is usually the chair of the committee, exceptions are the Cancer Cell Biology and Cellular & Integrative Physiology graduate programs. All faculty on the committee are voting members, except for the Cancer Cell Biology program - the mentor is a non-voting member of the committee.

This form should be completed by the end of Year 2. Complete the form with the required information. Obtain signatures from faculty who have agreed to serve on the committee and submit the form to the Office of Research and Graduate Education. A copy of the approved form will be returned to your graduate program.

All committee members are to be present at the final examination (dissertation defense). If an examination cannot be scheduled at a time convenient to all committee members, one member may participate through tele- or video-conferencing. Another option is that the dean or his/her designee may permit another faculty member to substitute for the original committee member - provided that the original committee member is not the chair. There can be no substitute for the chair. Only one substitute is allowed, and the request for a substitute must be made in writing to the Office of Research and Graduate Education before the examination. You, the committee chair, and both the original faculty member and the substitute faculty member should sign the request form for a substitute. A substitute faculty member must have the same or higher graduate faculty status as the original faculty member and should represent the same academic discipline or specialization. A form for this substitution/replacement is online.

#### Plan of Study

This form should be completed by the end of Year 2. All courses listed must meet the graduate standards for certification for graduation. After completion, committee members must sign the form. Return the signed form to the Office of Research and Graduate Education (2271 HSS) – a copy will be returned to your chosen graduate program. Any changes in the Plan of Study must be made through

mutual agreement, between you and your committee members - you must submit a memorandum of changes to the HSC Office of Research and Graduate Education.

### Review Article

During your graduate training, it is recommended that you write a review article with your mentor. Publication of a review article can lead to scientific recognition in your research area, can be a significant part of your Introduction (Background and Significance) of your dissertation, and can assist you in obtaining a postdoctoral fellowship.

### Shuttle Sheet Request

The "Request for Shuttle Sheet" must be submitted no later than 3 weeks before the dissertation defense. This form requires signatures from the members of the dissertation committee, chair of the committee, and program graduate director. The Chair of the Dissertation Committee forwards this form to the Office of Research and Graduate Education. This is a requirement of all dissertations. The date of the dissertation defense should be scheduled in a timely manner so that you meet all deadlines necessary for graduation.

### Shuttle Sheet

Return the Shuttle Sheet form within 24 hours of the dissertation defense to the Office of Research and Graduate Education. This form is also a checklist of requirements that must be met before you graduate. The Office of Research and Graduate Education will send this form directly to the Chair of your Dissertation Committee for signatures by the other members of the Committee and program graduate director upon conclusion of the dissertation defense. The Alumni Information Sheet will be attached to the Shuttle Sheet and should be completed and returned to Office of Research and Graduate Education. If employment is uncertain at the time of graduation, complete the form anyway and return it at a later date.

### Electronic Submission of Dissertation

WVU requires the electronic submission of all dissertations (ETD's). See <http://www.wvu.edu/~thesis/> for one-stop-shop information regarding electronic submission of ETD's. In addition, consultants in the University's computer centers are prepared to help students and faculty in the process of preparing their ETD.

**NOTE:** It is your and your mentor's responsibility to determine the format of a written dissertation. There are a number of copies of dissertations to learn from. The contemporary style is in chapter format with:

Abstract

Chapter 1 - literature review, project rationale, and statement of hypothesis

Chapter 2, etc. - published manuscripts

Chapter - additional dissertation research

Chapter – overall discussion, conclusion, and future directions

### Application for Graduation and Diploma Form

This form should be submitted to the Office of Research and Graduate Education within the first 2 weeks of the semester you plan to graduate. If the degree is not actually earned during that term, you must notify the Office and submit a new Form when registering for the term in which completion is

again anticipated. The Office is responsible for maintaining all of your records necessary to certify you for graduation.

#### Exit Interview

The exit interview is conducted with the Assistant VP for Graduate Education shortly after the successful defense of the dissertation. The interview is collegial and will allow you to express your opinions about your graduate experiences. All expressed opinions are confidential and recorded anonymously. The purpose of the interview is to use your constructive criticisms in a positive way to improve the IGPBMS and for assessment of the IGPBMS by the WVU and HSC Graduate Councils. A review of your curriculum vitae is also conducted at this time.

#### Investiture/Commencement

It is expected that all graduates will attend the Investiture Ceremony for the School of Medicine or School of Pharmacy. These ceremonies are held on Saturday/Sunday in the second week of May. The Investiture Ceremonies feature the graduates of the IGPBMS, the MD/PhD Scholars Program, the MD program, and the PharmD program. An important highlight of the ceremony is the recitation of the Ethical Affirmation for Scientists, for those students receiving the Ph.D. degree. This latter oath was originated at WVU and was published in the journal, *Science*, in 2003.

#### Postdoctoral Fellowship

Most of our graduates conduct a postdoctoral fellowship for two-to-five years, sometimes in two different research laboratories. The postdoctoral years equate to a honeymoon period in research. Typically, postdoctoral fellowships are conducted in an academic and/or industry setting. The goals are to expand your horizons in research and to publish and gain the necessary experiences and wisdom to garner your first position. Many first positions in academia, industry, and even small colleges require a postdoctoral experience.

## Survival Skills

For a successful start to your Scientific Career.

- **The Office of Graduate Education is your Advocate – our doors are always open**
- **First day of graduate studies is the first day of your scientific career**
- **Plan ahead for your next position**
- **Begin your graduate education on the run**
- **You are responsible for your own education – we are here to guide you**

### Survival Skills

- 4 key words – communication, assertiveness (actively seek assistance from older students and faculty), passion, drive
- Key mottos – write early-write often; read-read-read

### Year 1

- Study continuously – individually/in groups – read ahead.
- Network – study groups, older students, faculty – science is all about collaborations
- If your didactic foundation is poor, you are expected to catch up – ask for help from faculty and students – read the required text, etc. – ask for a tutor
- Be an information producer as well as an information consumer – teach others if you know it – teaching is the best way to learn
- Do not assume if you had the subject before that you will do well at the graduate level without studying – exams are different – thinking exams
- Learn the concepts – synthesize information – THINK
- Science is not fact
- Multitask – balance didactic coursework and lab rotations. 3.00 GPA necessary now, not later in your career. Your Future depends on publications, your ability to give a cogent seminar, scientific respect, and recommendations.
- Short Lab Experiences – communicate, know what is expected – CCB program asks your rotation mentors for qualifying exam questions.
- In the first year, your primary objectives are learning from and passing the didactic coursework.
- Embrace the opportunity to obtain a broad education. It will provide you with many opportunities – industry looks for this type of person. Most faculty do not do what we did as a graduate student. You can focus later on in your career, starting with your postdoctoral fellowship.
- Physical/mental issues – let me know up front if you have a physical or mental problem. Let us help you proactively – works better than retroactively.
- Take personal time – do not reach diminishing returns

### Year 2 to Graduation

- Be assertive, communicate
- Be creative, curious, imaginative, original
  - **MAKE A CONTRIBUTION**
- Be a team player – collaborate
- Challenge your mentor – above all communicate with your mentor

- Read-Read-Read
- Complete all required forms
- Get involved with the Graduate Student Organization (GSO)
- Write early-write often - writing helps you formulate ideas and papers
- Submit a Pre-doctoral Fellowship
- Write a review article with your mentor
- Work with your Dissertation Committee
- Qualifying exam – different among programs
- In your first years in the laboratory, ideas and knowledge are 95% mentor and 5% student – when you finish this ratio should be reversed – a goal to strive for is to know more than your mentor in your area of research
- Ph.D. – based on original research accomplished and not on time served
- Research sites to know
  - <http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?DB=pubmed>
  - [www.pubcrawler.ie](http://www.pubcrawler.ie)
  - <http://highwire.Stanford.edu>

#### Celebrations

- Research Induction Ceremony
- Investitures – School of Medicine, School of Pharmacy

#### Postdoctoral Fellowship

- Interview before graduation
- Do a postdoc at another institution

#### Additional Information To Know

##### Ground Rules

- Vacation – arrange with mentor – informal rule, not more than 2 weeks. Difference between University breaks/vacations
- Sick – your responsibility to notify all appropriate faculty. Notify faculty before and not after.
- WVU policy of honesty and social justice

##### Graduate Room

- Evacuation routes
- Desk assignment and keys and card access
- Keep clean
- Textbooks in Graduate Room
- Card access to building
- Wireless

#### **Pay FEES every semester**

**Addresses and contact information – keep current in our Office**

**Submit your FINAL UNDERGRADUATE TRANSCRIPTS**

**Annually update your myIDP**



## Scientific Integrity & Social Justice

The following are direct statements of WVU Policy.

### Academic Dishonesty

Academic Dishonesty is defined to include, but is not limited to, any of the following:

1. Plagiarism: Plagiarism is defined in terms of proscribed acts. Students are expected to understand that such practices constitute academic dishonesty regardless of motive. Those who deny deceitful intent, claim not to have known that the act constituted plagiarism, or maintain that what they did was inadvertent are nevertheless subject to penalties when plagiarism has been confirmed. Plagiarism includes, but is not limited to, the following:
  - a. Submitting as one's own work the product of someone else's research, writing, artistic conception, invention, or design; that is, submitting as one's own work any report, notebook, speech, outline, theme, thesis, dissertation, commercially prepared paper, musical piece or other written, visual, oral or electronic/computerized material that has been copied in whole or in part from the work of others, whether such source is published or unpublished.
  - b. Incorporating in one's submission, without appropriate acknowledgement and attribution, portions of the works of others; that is, failing to use the conventional marks and symbols to acknowledge the use of verbatim and near-verbatim passages of someone else's work or failing to name the source of words, pictures, graphs, etc., other than one's own, that are incorporated into any work submitted as one's own.
2. Cheating and dishonest practices in connection with examinations, papers, and projects including, but not limited to:
  - a. Obtaining help from another student during examinations
  - b. Knowingly giving help to another student during examinations, taking an examination or doing academic work for another student, or providing one's own work for another student to copy and submit as his/her own.
  - c. The unauthorized use of notes, books, or other sources of information during examinations
  - d. Obtaining without authorization an examination or any part thereof
3. Forgery, misrepresentation, or fraud:
  - a. Forging or altering, or causing to be altered, the record of any grade in a grade book or other educational record.
  - b. Use of university documents or instruments of identification with intent to defraud.
  - c. Presenting false data or intentionally misrepresenting one's records for admission, registration, or withdrawal from the university or from a university course. Knowingly presenting false data or intentionally misrepresenting one's records for personal gain.
  - d. Knowingly furnishing the results of research projects or experiments for the inclusion in another's work without proper citation
  - e. Knowingly furnishing false statements in any university academic proceeding.

### Social Justice

West Virginia University is committed to social justice. The faculty join with our colleagues throughout this campus to promote learning in a positive environment base on open communication, mutual

respect, and non-discrimination. We support open inquiry and communication between faculty and students in every aspect of our course. Discrimination of any kind violates the principles of mutual fairness and respect that are necessary to maintain a positive learning environment. We welcome suggestions on ways to improve, enhance or protect the rights of our students and faculty. Our University does not discriminate on the basis of race, sex, age, disability, veteran status, religion, sexual orientation, color, or national origin.

#### Disability

If you are a person with a disability and anticipate needing any type of accommodation in order to participate in the BSGP, please advise us and make appropriate arrangements with Disability Services (304-293-6700).

#### Academic Rights and Responsibilities

WVU courses follow the WVU Code of Student Rights and Responsibilities available online at: [http://studentlife.wvu.edu/office\\_of\\_student\\_conduct/student\\_conduct\\_code](http://studentlife.wvu.edu/office_of_student_conduct/student_conduct_code)

**Please read – HSC graduate programs strictly adhere to the university’s Student Code of Conduct.**

#### Inclusivity Statement

“The West Virginia University community is committed to creating and fostering a positive learning and working environment based on open communication, mutual respect, and inclusion.”

## Academic Probation and Appeal

### Academic Probation, Suspension, & Dismissal

You are in good academic standing if you have a 3.00 GPA or better and grades of A, B, or S in research, **note** – a grade of “B” in a short lab experience or the first “U (unsatisfactory grade) in research is a warning grade. You will be on academic probation if your GPA is less than 3.00 or you receive a C in a lab experience. If you are on academic probation following the fall semester of Year 1, you have the spring semester to achieve a 3.00 GPA or A/B in rotations. You must retake any first-year course with a grade of D or below. Failure to achieve good academic standing by May of Year 1 may result in dismissal from the IGPBMS and may result in movement from the PhD to the MS program, with loss of stipend and tuition coverage. To be reinstated into the PhD program with stipend and tuition coverage, you must achieve a 3.00 GPA by the end of the fall semester of Year 2. Failure to do so will most likely result in dismissal from the IGPBMS.

Graduate programs have the authority to place you on probation. Recommendations of suspension or dismissal from a graduate program are submitted by the Graduate Program Director or Committee in writing to the Assistant VP for Graduate Education. The Academic Standards Committee, comprised of Admission Members for first-year students or the graduate directors for those students in a program, will meet with the Assistant VP to discuss the recommendation and recommend to the Assistant VP (Dean’s designee) whether to accept, modify, or reject the program’s recommendation of dismissal. Dismissal from a specific graduate program will lead to dismissal from the IGPBMS, if no other program or faculty member will accept you.

### Academic Suspension and Reinstatement

The following information is taken from the online Graduate Catalog of the Health Sciences Center. In Year 1, students are subject to suspension at any time if their GPA is below the allowable level. The Associate VP for Graduate Education has the authority to waive suspension in favor of probation if in his/her judgment the circumstances of individual cases so warrant.

Academic suspension identifies the status of a student who has failed to meet the University minimum standards and who has been notified formally of academic suspension by the Dean. If suspended, you will not be permitted to register for any classes, including those in summer sessions, offered by the University for academic credit until the student has been officially reinstated. Minimum time for suspension is one academic semester but will not exceed one calendar year from the date of your first suspension. If you are suspended for academic deficiencies and take courses at other institutions during the period of suspension, you cannot automatically transfer such credits toward a degree at WVU upon readmission to the University.

During the semester immediately following the effective date of suspension, you may petition in writing for reinstatement. The school petitioned shall establish the terms of your reinstatement. The school that reinstates you removes your suspension restrictions in Admissions & Records and accepts you.

### Appeal of Dismissal for Failure to Meet Academic Standards

A decision to dismiss you for failure to meet academic standards can be made only after the appropriate program committee or representative has counseled you. Counseling should take place as soon as possible after discovery of the problem. After you are given a reasonable opportunity to

correct deficiencies, there shall then be a formal review of your status by the appropriate program committee to determine whether you shall be retained or dismissed. You may provide the committee written documentation of your efforts to correct deficiencies.

A committee recommendation for dismissal, including any documentation provided by you to the committee, shall be forwarded to your dean (School of Medicine, Pharmacy, whichever is appropriate) and to you. Within 15 calendar days of receipt of the committee's recommendation, the dean shall inform you and your program of his/her decision. A decision to dismiss shall specify whether the dismissal is from the program or school. The dean may also dismiss you from the institution if you do not meet institutional standards.

In Step 1 of the appeal, the student shall prepare and sign a document stating the facts constituting the bases for the appeal. A copy of this document must reach the dean within 30 calendar days of receipt of written notice of dismissal. The student shall be given an opportunity to discuss the appeal with the dean at any time. If the matter is not resolved satisfactorily within 15 calendar days of the dean's receipt of the student's appeal, the student may proceed to Step 2.

In Step 2, the student will forward a copy of the appeal to the appropriate vice president within 15 calendar days of failure to resolve the matter at the level of the dean. Prior to the decision of the vice president, the student will be given an opportunity to discuss the appeal with the vice president. The decision of the vice president, as the president's designee, shall be rendered within 15 days of receipt of the student's appeal and is final.

## Career Opportunities

There are many opportunities and future challenges for Ph.D.'s. In the last number of years, many Ph.D.'s have had successful careers in industry, biotechnological companies, and government. Many have migrated to the teaching profession at health sciences centers, universities, and small colleges. Currently, there is a need for excellent teachers in STEM (Science, Technology, Engineering, and Mathematics) disciplines – at all levels albeit primary, secondary, or college. Scientific writing has been rewarding for many Ph.D.'s. Ph.D.'s are in demand as patent lawyers in large markets like N.Y.C., Boston, D.C., etc. Research-development professional is a relatively new profession – their organization was founded in 2009. These individuals do what it takes to promote the careers of scientists – help write grants, multi-investigator grants, improve web sites, etc. Many Ph.D.'s are finding opportunities in the business world. One of our recent graduates conducted a clinical-type postdoctoral fellowship at the University of Chicago. Then he enrolled in the University of Chicago Booth School of Business to obtain a MBA. His destination is industry and drug discovery.

Professional workshops are organized and run by the professional office in the provost's office downtown and by us at the Health Sciences Center, primarily by the Graduate Student Organization (GSO).

## **Graduate Student Organization (GSO)**

The GSO of health sciences organizes and hosts monthly sessions on professional skills development and career counseling, conducts fund-raising activities, holds social events, and participates in rewarding community activities. The leadership of the GSO has monthly meetings that are attended by students from graduate programs throughout the Health Sciences Center. The GSO welcomes the first-year biomedical sciences students to attend the monthly meetings. Please view the GSO web site at: <http://www.hsc.wvu.edu/ResOff/graduate-student-organization/Home>.

## WVU and Health Sciences Center

The following information about WVU and HSC is culled from more detailed information at:

[www.hsc.wvu.edu/resoff/PhDPrograms/Biomedical-Sciences/pages/Morgantown/Graduate-Student-Orientation-Guide](http://www.hsc.wvu.edu/resoff/PhDPrograms/Biomedical-Sciences/pages/Morgantown/Graduate-Student-Orientation-Guide)

### Bookstores

The HSC bookstore is located on the ground floor of Health Sciences North, across from the small cafeteria. Textbooks for classes offered through the HSC can be purchased at this bookstore. The main WVU bookstore is located next to the Mountainlair (Student Union), on the downtown campus

### Campus Transportation

The Personal Rapid Transit (PRT) system is an easy-to-use transportation system for WVU students and faculty, as well as the Morgantown community. There are five stations: Walnut St., Beechurst Ave., Engineering Sciences, Evansdale Residential Complex, and Health Sciences. Access to the PRT requires your student ID, which is called the Mountaineer Card. A University bus system is also available.

### Food

The HSC operates two cafeterias on the ground floor. A large cafeteria and dining room are in Health Sciences South, and a smaller cafeteria offering a more limited selection is in Health Sciences North. Students are also welcome in the Ruby Memorial Hospital cafeteria, on the 4th floor of the hospital. Eating and drinking are prohibited in all research and teaching laboratories.

### Mail and Mailboxes

You can mail pre-stamped letters in the office near receiving/loading docks on the ground floor at the end of HSS. Campus mail for all first-year students comes to the Office of Research and Graduate Education. You may pick-up your mail in the Office. Please note that HSC policy forbids the receipt of personal mail at a University address. Be sure and tell your friends and family to use your home address. Likewise, while you are free to use the ground floor Office for sending personal mail, you may not send personal mail using your HSC address.

### Parking

If you plan to drive to campus, you will need a parking permit. Graduate students (as well as junior faculty and staff) are usually assigned to Lot 81, also called "the pit." This lot is on Van Voorhis Road, below the Health Sciences PRT station. Parking costs ~ \$366 starting in July 31. Expiration date for parking permits is June 30. Before then, you will be notified (each year) to renew your parking permit online. Parking Management recommends that parking applications be purchased before the start of Orientation to secure a parking pass.

For your information, the Parking Office is located at Mountaineer Station (across from Applebee's) 1112 Van Voorhis Road - Phone: (304) 293-5502, (<http://transportation.wvu.edu>)

Email: [transportation@mail.wvu.edu](mailto:transportation@mail.wvu.edu) Office Hours: Monday through Friday - 7:30am-4:30pm

### Phone Access

- Calling from a WVU number to another WVU number: Dial 3, then the last 4 digits of the number.
- Calling from a WVU number to an outside number: Dial 9, then the full number.

Long-distance phone calls for personal reasons must be made using your cell phone. For laboratory-related business, each faculty member has an access number. They may make this number available to you at their discretion.

### Photocopying and Printing

For personal use, you can make copies in the copy center, located by the small cafeteria on the ground floor, Health Sciences North. Also, you can use your Mountaineer ID card for the copy machine in the HSC library. You can add money to your Mountaineer card online at <http://wvucard.wvu.edu> and click on “Deposit Mountie Bounty here”, link on left side of page.

The Common Graduate Room has two computers and a printer. We will supply you with paper and ink for the printer – please ask Andrew, Lea Ann or Penny.

### Student Address Records

The University keeps a record of up to four addresses on you. These include your permanent address, billing address, and grade report address. If you want your bills and grade reports to go to your Morgantown address, you must list it as your *permanent address*. This change can be made in the Admissions and Records office on the first floor of Health Sciences North, across from the elevators. This is particularly important for international students – otherwise your grade reports and bills will go to your country of origin.

### Student ID Cards

After you register for classes, you can obtain your student ID card, called the Mountaineer Card. This card is for personal identification, library privileges, PRT access, and recreation center access. You can also use it for discounted admission to University-sponsored events. Many businesses in Morgantown also offer student discounts if you show identification. This card can also be keyed for access to the Animal Care, DNA core facilities, and the Erma Byrd Biomedical Research Building on the Health Sciences campus.

To obtain the card, take your driver’s license or other photo ID to the University ID card center (293-CARD) in G-118 Bennett Tower, Evansdale Residential Complex. Office Hours: 8:15 am to 4:45 pm, Monday through Friday.



## Seven Ph.D. Training Programs

Requirements of the individual graduate programs can be obtained from the graduate directors. Websites of the individual graduate program can be accessed via: <http://www.hsc.wvu.edu/resoff/>.

You will have the opportunity to select a research mentor and a specific graduate program by December/January or by May and summer of Year 1. In the summer of Year 2, you will take *Scientific Writing*. In Years 2 & 3, you will take advanced coursework in your specialized training program, do research and some teaching, take the qualifying (preliminary, comprehensive) examination, and defend a dissertation proposal (PhD candidacy exam) to your dissertation committee. Years 3 to 5 are filled with research activities that culminate in defense of the dissertation research that is presented publicly and defended privately to the dissertation committee. It is strongly encouraged that you meet at least twice a year with your Committee (once is required). Please take advantage of the expertise of your dissertation committee members.

## **Addendum**

**Compact Between Biomedical Graduate Students  
and Their Research Advisors**

**NIH Biosketch**

**Research Compliance Information**

**Evaluation Form – Short Lab Experience**

**Leave of Absence Policy**

## **Compact Between Biomedical Graduate Students and Their Research Advisors**

Pre-doctoral training entails both formal education in a specific discipline and an apprenticeship in which the graduate student trains under the supervision of one or more investigators who are qualified to fulfill the responsibilities of a mentor. A positive mentoring relationship between the pre-doctoral student and the research advisor is a vital component of the student's preparation to become not only an independent and successful research scientist but also an effective mentor to future graduate students.

Individuals who pursue a biomedical graduate degree are expected to take responsibility for their own scientific and professional development. Faculty who advise students are expected to fulfill the responsibilities of a mentor, including the provision of scientific training, guidance, instruction in the Responsible Conduct of Research and research ethics, and financial support. The faculty advisor also performs a critical function as a scientific role model for the graduate student.

### Core Tenets of Pre-doctoral Training

#### **Institutional Commitment**

Institutions that train biomedical graduate students must be committed to establishing and maintaining high-quality training programs with the highest scientific and ethical standards. Institutions should work to ensure that students who complete their programs are well-trained and possess the foundational skills and values that will allow them to mature into independent scientific professionals of integrity. Institutions should provide oversight for length of study, program integrity, stipend levels, benefits, grievance procedures, and other matters relevant to the education of graduate students. Additionally, they should recognize and reward their graduate training faculty.

#### **Program Commitment**

Graduate programs should endeavor to establish graduate training programs that provide students with the skills necessary to function independently in a scientific setting by the time they graduate. Programs should strive to maintain scientifically relevant course offerings and research opportunities. Programs should establish clear parameters for outcomes assessment and closely monitor the progress of graduate students during their course of study.

#### **Quality Mentoring**

Effective mentoring is crucial for graduate school trainees as they begin their scientific careers. Faculty mentors must commit to dedicating substantial time to the graduate students to ensure their scientific, professional and personal development. A relationship of mutual trust and respect should be established between mentors and graduate students to foster healthy interactions and encourage individual growth. Effective mentoring should include teaching the scientific method, providing regular feedback in the form of praise and constructive criticism to foster individual growth, teaching the "ways" of the scientific enterprise, and promoting students' careers by providing appropriate opportunities. Additionally, good graduate school mentors should be careful listeners, actively promote and appreciate diversity, possess and consistently exemplify high ethical standards, recognize the contributions of students in publications and intellectual property, and have a strong record of research accomplishments and financial support.

#### **Provide Skills Sets and Counseling that Support a Broad Range of Career Choices**

The institution, training programs, and mentor should provide training relevant to academic, industrial, and research careers that will allow their graduate students to appreciate, navigate, discuss, and develop their career choices. Effective and regular career guidance activities should be provided, including exposure to academic and non-academic career options.

### Commitments of Graduate Students

- **I acknowledge that I have the primary responsibility for the successful completion of my degree.** I will be committed to my graduate education and will demonstrate this by my efforts in the classroom and the research laboratory. I will maintain a high level of professionalism, self-motivation, engagement, scientific curiosity, and ethical standards.
- **I will meet regularly with my research advisor and provide him/her with updates on the progress and results of my activities and experiments.**
- **I will work with my research advisor to develop a thesis/dissertation project.** This will include establishing a timeline for each phase of my work. I will strive to meet the established deadlines.
- **I will work with my research advisor to select a thesis/dissertation committee.** I will commit to meeting with this committee at least annually (or more frequently, according to program guidelines). I will be responsive to the advice of and constructive criticism from my committee.
- **I will be knowledgeable of the policies and requirements of my graduate program, graduate school, and institution.** I will commit to meeting these requirements, including teaching responsibilities.
- **I will attend and participate in laboratory meetings, seminars and journal clubs that are part of my educational program.**
- **I will comply with all institutional policies, including academic program milestones.** I will comply with both the letter and spirit of all institutional safe laboratory practices and animal-use and human-research policies at my institution.
- **I will participate in my institution's Responsible Conduct of Research Training Program and practice those guidelines in conducting my thesis/dissertation research.**
- **I will be a good lab citizen.** I will agree to take part in shared laboratory responsibilities and will use laboratory resources carefully and frugally. I will maintain a safe and clean laboratory space. I will be respectful of, tolerant of, and work collegially with all laboratory personnel.
- **I will maintain a detailed, organized, and accurate laboratory notebook.** I am aware that my original notebooks and all tangible research data are the property of my institution but that I am able to take a copy of my notebooks with me after I complete my thesis/dissertation.
- **I will discuss policies on work hours, sick leave and vacation with my research advisor.** I will consult with my advisor and notify fellow lab members in advance of any planned absences.
- **I will discuss policies on authorship and attendance at professional meetings with my research advisor.** I will work with my advisor to submit all relevant research results that are ready for publication in a timely manner prior to my graduation.

- **I acknowledge that it is primarily my responsibility to develop my career following the completion of my doctoral degree.** I will seek guidance from my research advisor, career counseling services, thesis/dissertation committee, other mentors, and any other resources available for advice on career plans.

#### Commitments of Research Advisors

- **I will be committed to the life-long mentoring of the graduate student.** I will be committed to the education and training of the graduate student as a future member of the scientific community.
- **I will be committed to the research project of the graduate student.** I will help to plan and direct the graduate student's project, set reasonable and attainable goals, and establish a timeline for completion of the project. I recognize the possibility of conflicts between the interests of externally funded research programs and those of the graduate student, and will not let these interfere with the student's pursuit of his/her thesis/dissertation research.
- **I will be committed to meeting one-on-one with the student on a regular basis.**
- **I will be committed to providing financial resources for the graduate student as appropriate or according to my institution's guidelines, in order for him/her to conduct thesis/dissertation research.**
- **I will be knowledgeable of, and guide the graduate student through, the requirements and deadlines of his/her graduate program as well as those of the institution, including teaching requirements and human resources guidelines.**
- **I will help the graduate student select a thesis/dissertation committee.** I will assure that this committee meets at least annually (or more frequently, according to program guidelines) to review the graduate student's progress.
- **I will lead by example and facilitate the training of the graduate student in complementary skills needed to be a successful scientist, such as oral and written communication skills, grant writing, lab management, animal and human research policies, and the ethical conduct of research.** I will encourage the student to seek opportunities in teaching, if not required by the student's program.
- **I will expect the graduate student to share common laboratory responsibilities and utilize resources carefully and frugally.**
- **I will not require the graduate student to perform tasks that are unrelated to his/her training program and professional development.**
- **I will discuss authorship policies regarding papers with the graduate student.** I will acknowledge the graduate student's scientific contributions to the work in my laboratory, and I will work with the graduate student to publish his/her work in a timely manner prior to the student's graduation.
- **I will discuss intellectual policy issues with the student with regard to disclosure, patent rights and publishing research discoveries.**
- **I will encourage the graduate student to attend scientific/professional meetings and make an effort to secure and facilitate funding for such activities.**

- **I will provide career advice and assist in finding a position for the graduate student following his/her graduation.** I will provide honest letters of recommendation for his/her next phase of professional development. I will also be accessible to give advice and feedback on career goals.
- **I will provide for every graduate student under my supervision an environment that is intellectually stimulating, emotionally supportive, safe, and free of harassment.**
- **Throughout the graduate student's time in my laboratory, I will be supportive, equitable, accessible, encouraging, and respectful.** I will foster in the graduate students professional confidence and encourage critical thinking, skepticism and creativity.

This draft of the *Compact Between Biomedical Graduate Students and their Research Advisors* was unanimously endorsed by the GREAT (Graduate Research Education & Training) Group Steering Committee at its June 16, 2008, meeting in Washington, DC.

## NIH Biosketch

### BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.  
Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME		POSITION TITLE	
eRA COMMONS USER NAME (credential, e.g., agency login)			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	MM/YY	FIELD OF STUDY

**A. Personal Statement:**

*(Something about yourself, background, and goals; overview of research project)*

**B. Positions and Honors:**

Positions and Employment

Honors and Societies

Research-related Experience *(Include meetings attended, all presentations)*

**C. Selected Peer-reviewed Publications:** *(Chronological order)*

**D. Research Support:**

Ongoing Research Support

Completed Research Support

## Research Compliance Information

<http://www.oric.research.wvu.edu>



## Evaluation Form for Short Laboratory Experience

<b>Student name</b>	
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**Directions:** Place a check mark next to the box that best describes the student's performance. The first box represents A level work, the second box - C and the third box - F. Circle areas in the box that need improvement to indicate B or D performance.

### Research Skill

	Adept at following instructions, few mistakes, and mistakes are not repeated. Has excellent research skills. Has good common sense.
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	Good at following instructions despite little or no prior experience. Makes few mistakes and the mistakes are not repeated.
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	Requires considerable follow-up to ensure correct procedures are followed. Mistakes are common and often repeated. Needs to be guided at every step.
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### Citizenship

	Informs fellow research members when a research item needs to be reordered or replenished. Offers to replenish the item. Demonstrates tidiness. Does not interfere with the work of others. Research items are appropriately labeled and stored. Works well with others.
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	Informs fellow research members if a research item needs to be restored. Work area is left in reasonable shape. Some research items are labeled. Generally gets along with fellow research members.
--	---

	Distracting in the research setting, with chatter or questions. Does not get along well with others. Is messy and research items are not properly identified.
--	---

### Research Notebook

	Notebook is complete and neat. Anyone could reproduce experiments based on the record. Purpose for experiment and protocols are easy to discern. Data are neatly compiled, and results are summarized.
--	--

	Notebook is neat. Protocols are summarized, but recipes or other details are missing. Data are listed but conclusions are not summarized.
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	Notebook does not provide a resource for reproducing experiments. Protocols are lacking or incomplete. Data cannot be interpreted due to lack of labels. Conclusions are not provided. Notebook is messy and/or illegible.
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### Intellectual Ability

	Student readily grasps the hypothesis to be tested and the rationale for the experimental design. Time between experiments is spent reading the relevant literature or researching the protocol. Student is able to coherently explain what they are doing.
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	Student can explain what they are doing, but the hypothesis and rationale do not appear to be clear. Does some reading on own, but this area could be improved.
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	Student seems to be lost as to why they are performing the experiments and what the goal is for the laboratory. Spends little or no time reading about the laboratory topic or experimental approach.
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### Work Ethic

	Student works the agreed upon schedule. Student informs the PI of absences. Student makes efficient use of all time. Student demonstrates enthusiasm for research.
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	Student is generally present during agreed upon hours. The student will leave at the specified time even if the experiment is not complete. Student is seen surfing the internet and/or is late arriving. Student shows interest in research.
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	Student is frequently not present during agreed upon hours. Student does not communicate absences. Student wastes time and is frequently seen doing things other than research work. Student lacks interest in research.
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### Final Grade

	Grade	+/-
	A	
	B	
	C	
	D	
	F	

**Additional Comments - please identify strengths and areas that need improvement.**

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<b>Faculty Name</b>	
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## Long-Term Leave of Absence Policy for HSC Graduate Programs

### 1. Introduction and Definition

Under certain circumstances, graduate students may request or have imposed a long-term leave of absence (LOA) during which they are recessed without stipend from the program for a specified duration. There are several categories under which a student may petition for a leave of absence: medical, personal, and academic. In addition, an administrative leave of absence may be enforced due to serious academic or professional deficiencies.

A long term LOA is a period greater than 1 calendar month duration during which time the student is not engaged in significant productive activity toward the degree. The LOA may last up to 1 year. WVU policy is that students can only be inactive in their program for 1 year after which time they would need to reapply for admission.

### 2. Policy

The request for the long-term LOA should be presented in writing to the Graduate Program Director and reviewed by the Program's faculty or subcommittee who will then recommend to the Associate Dean for Research and Graduate Programs (Dentistry, Nursing, Pharmacy and Public Health) or the Assistant Vice President for Graduate Education (Medicine) the terms under which the student may return to the program. Following the agreed upon time of absence, a student in need of more time in recess will be officially withdrawn from the program, unless the above administrative groups grant an extension because of special circumstances. Once withdrawn from the program, individuals must reapply for and gain admission to resume their studies.

### 3. Types of Leave and Procedures

#### **Student-initiated leaves:**

**Procedure:** Request for a LOA must be initiated in writing. Student-initiated LOA requests use the Long-term LOA form. The student and the student's advisor (if applicable) should sign the form and present it to the Graduate Program Director. The request will be reviewed by the Program Director, Program Faculty and/or subcommittee and appropriate Dean. Upon acceptance of the request the student will be notified in writing and the letter will contain any applicable requirements for return to the program. Upon return to the program, the student presents any required documentation to the Graduate Director. Once the return is accepted, the Graduate Director signs the LOA form indicating that the leave is over. If a student chooses not to return from the LOA, they should submit a letter to the Graduate Director indicating this fact.

**Medical LOA:** This type of LOA is reserved for acute medical problems of a physical or mental health nature affecting the student or a first-degree relative requiring intense medical care. In order to return to the program, the student will present a letter of release from the treating physician clearly stating that they are fit to return to the rigors of a graduate program.

**Personal LOA:** This type of LOA is used for reasons of a personal nature affecting the student's ability to be successful in the program. These may include, but are not limited to requests regarding family-related issues unrelated to health, visa issues, or a reconsideration of career direction.

**Academic LOA:** This type of LOA is reserved for students who desire a recess from the program while currently unsatisfactory in a course prior to the issue of a final evaluation in that course. Student's leaving the program for this reason will have specific requirements for their return, which will generally

involve successful remediation of their knowledge base. Return to the program will involve evaluation of the remediation as well as the entire academic record. Students who fail to successfully meet the criteria stipulated in the letter granting the leave may not be permitted to return. Should a student be permitted to return to the program, the Graduate Program will recommend if the student returns on academic probation or in good academic and professional standing. Students, who are recommended not to return to the program, must reapply and gain admission in order to resume.

**Administrative-initiated leave:**

**Procedure:** The administrator (Graduate Director, advisor, Dean) initiates this request in writing. The LOA should indicate the reason for the leave, the length of the leave, and any requirements for return. LOA requests should be approved by the Graduate Director and appropriate Dean prior to presentation to the student. The student should sign the letter indicating that they understand the terms. Upon return to the program, the student presents any required documentation to the Graduate Director. Once the return is accepted, the Graduate Director signs the LOA form indicating that the leave is over. If a student chooses not to return from the LOA, they should submit a letter to the Graduate Director indicating this fact.

**Administrative LOA:** This type of LOA is imposed by the Graduate Director and/or appropriate Dean for that Graduate Program due to academic or professional deficiencies, such as failure to progress in research, inattention to the academic or professional standards of a graduate student, or unexplained absence from the program of greater than 1 week. This type of LOA will be part of the student's permanent record.

**Academic LOA:** This is the same as the student-initiated leave and is due to a deficiency in academic standing prior to the final evaluation in a course(s).

4. Exceptions/Conditions

**LOA with stipend:** In some circumstances, the student may not be in residence in the program for greater than one month but may be able to achieve significant progress toward the degree. During this time, the student may remain on stipend. Such agreements should be documented in writing and include:

1. Reason for leave
2. Duration and timing of leave
3. Planned activities during leave
4. Planned method of communication during the leave

The letter documenting these conditions must be signed by the Graduate Director and placed in the student's file.

**Extension of time in the program or to meet program-specific requirements:** If the student is unable to complete the degree within the University time limit for attaining the degree, they may petition for an extension equal to the time of the LOA. Petitions must be presented to the Graduate Director in writing 6 months prior to the end of this limit. Petitions for extensions of other program specific activities such as candidacy exams, seminars, etc. should also be handled in writing and occur prior to the semester in which the activity is to take place.

**Exceptions to the above:** Programs that are accredited may have specific residency requirements and the rules of the accrediting agency supersede these institutional guidelines.

**Failure to return:** If a student fails to return from the LOA on the specified time and has not made any request for an extension, they shall be immediately withdrawn from the program. Reentry into the program will require a new application for admission.

**Parental LOA:** This is a LOA due to the birth or adoption of a child. Stipend should remain intact for the duration of the leave term as specified below.

6 Weeks individual, unless doctor- ordered

8 weeks total per family if both parents are enrolled in HSC graduate programs

**REQUEST FOR A LONG-TERM LEAVE OF ABSENCE**

Name:

Graduate Program:

Type of leave:

- Personal
- Medical
- Academic
- Administrative

Person initiating request:

Date of the start of leave:

Date of anticipated return:

Reason for request:

Signature of student:

Signature of advisor:

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**UPON RETURN FROM THE LEAVE**

Date of return:

Fulfillment of requirements for return:

Signature of Graduate Director:

Signature of Student:

Note: this form will be placed in the student's file

**LETTER GRANTING A PERSONAL LOA**

(Date)

(insert student name and address)

Dear (insert student name),

The Graduate Program in the \_\_\_\_\_ approved your request for a medical leave of absence from \_\_\_\_\_ to \_\_\_\_\_ due to an (insert medical condition). Due to the medical nature of the request, a doctor's clearance will be needed to return to the program. As per the leave of absence policy, if additional time is required, please keep in mind that an extension should be requested. We hope for your successful recuperation and return to the program in good health.

Sincerely,

(insert signature)

Graduate Director, Graduate Program in \_\_\_\_\_

(insert signature)

Associate Dean/VP for Graduate Studies

cc: student's mentor's name here  
student's file

**SAMPLE LETTER APPROVING OTHER TYPES OF LEAVE**

(Date)

(student name address)

Dear (insert student name),

The Graduate Program in the \_\_\_\_\_ approved your request for a personal/medical/academic leave of absence from \_\_\_\_\_ to \_\_\_\_\_.

Include any requirements for return to the program.

As per the leave of absence policy for the program, if you require more than a year before returning to the program, re-application for admission into the graduate program will be necessary.

Sincerely,

(insert signature)

Graduate Director, Graduate Program in \_\_\_\_\_

(insert signature)

Associate Dean/VP for Graduate Studies

cc: student's mentor's name here  
student's file

Student's signature: