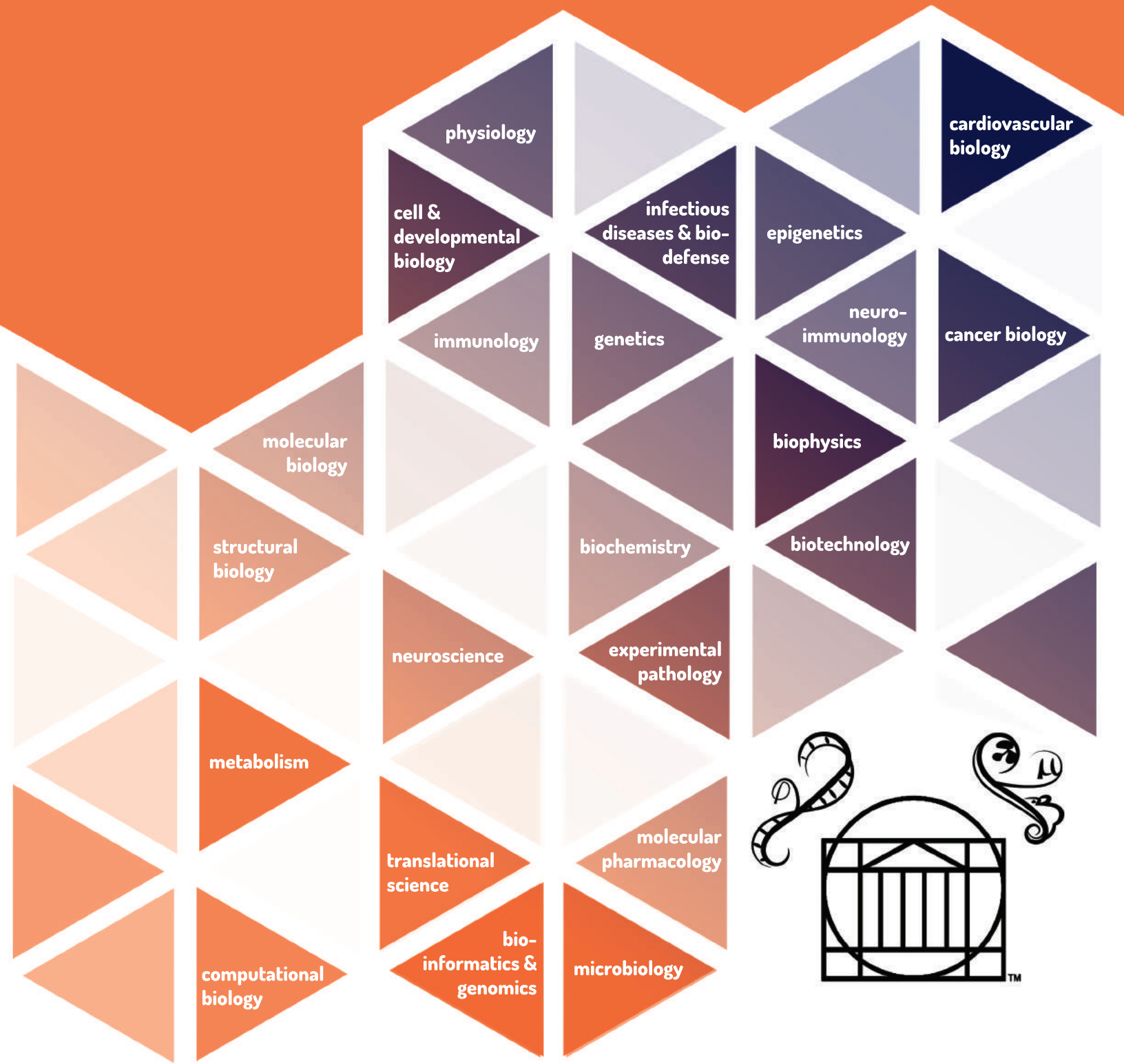
University of Virginia
Biomedical Sciences Graduate Program



2016 Graduate Program Handbook

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Cover art compliments of Riley Hannan, Tori Osinski, and Kathryn Michels.

Introduction to Biomedical Sciences Graduate Programs

Mission Statement

The goal of our graduate training programs is to provide students the necessary knowledge, intellectual capabilities, and technical skills to conduct outstanding state-of-the-art research in a wide range of exciting biological and biomedical areas.

What is BIMS?

The Biomedical Sciences (BIMS) Graduate Program at the University of Virginia is a vibrant interdisciplinary graduate program committed to training PhD candidates in becoming the next generation of scientific leaders. We achieve this goal through an immersive curriculum designed to provide students with fundamental scientific skills and exceptional research training. The BIMS program provides students with the flexibility to tailor an independent program of didactic coursework to support their developing research interests. In parallel, we offer students a broad spectrum of research opportunities, provided in partnership with the School of Medicine, Graduate School of Arts and Sciences, and School of Engineering and Applied Sciences at the University of Virginia.

BIMS students have the opportunity to train under world-renowned scientists who are committed not only to scientific discovery, but also to mentoring and teaching. The BIMS graduate program integrates four educational elements to providing rigorous training to students in the biomedical sciences:

Formal course work

Our students follow a curriculum that includes an immersive 12-week core course and more specialized advanced topic electives. These courses are designed to inspire students to develop into creative and analytical scientific thinkers through intensive training in scientific principles, data analysis, experimental design, and problem-solving skills.

Laboratory research

Independent research is at the core of the BIMS graduate program. Students have the opportunity to select from hundreds of faculty mentors whose research programs span a diverse array of scientific disciplines. Again, flexibility is an integral part of our program; students rotate with 3 faculty members of their choosing prior to selecting a mentor/thesis lab. Collaboration amongst UVA researchers is the rule rather than the exception, providing our students with unique training opportunities that are not found elsewhere.

Participation in the broader research community

Research retreats, topical symposia and seminar series, student research days, colloquia, research-in-progress meetings, and multi-institutional regional conferences supplement the formal course work and research activities of our students. Through many of these activities, students learn about cutting edge research that is being performed throughout the world from leaders in the field. Our students are also encouraged to participate in community outreach opportunities, where they learn to communicate science to a broader public and act as role models to younger students in the community.

Exposure to clinical/translational aspects of disease

Students in the BIMS graduate program are provided numerous opportunities to gain exposure to clinical and translational aspects of disease. These include frequent interactions with our clinical faculty, who teach in our formal courses and routinely serve as either co-mentors or members of student thesis advisory committees. Additionally, our students have the opportunity to attend organ-based "tumor boards" and infectious disease conferences that form part of the clinical enterprise of the School of Medicine. Finally, they have the option to rotate through clinical pathology laboratories to learn about diagnosis and monitoring of human disease.

BIMS Administration

Directors of Graduate Studies (DGS)

Name/Contact Information	Degree Granting Program
Joel Hockensmith jwh6f@eservices.virginia.edu (434) 924-5673 Jordan Hall Room 6053	Biochemistry
Jason Papin bmegrad@Virginia.EDU (434) 924-8195 MR-5, Room 2041	Biomedical Engineering
Bob Nakamoto rkn3c@Virginia.EDU (434) 982-0279 Snyder Building, Room 38	Biophysics
Ann Sutherland as9n@Virginia.EDU (434) 243-6711 Jordan Hall, Room 3-15	Cell Biology
Janet Cross jvc5b@virginia.edu (434) 243-9401 MR-5, Room 3312	Experimental Pathology
Lucy Pemberton lfp2n@Virginia.EDU (434) 243-6737 MSB (Hospital West), Room 7201	Microbiology
TBD	Neuroscience
Thurl Harris teh3c@virginia.edu (434) 924-1584 Jordan Hall, Rm 5221	Pharmacology
Brant Isakson bei6n@Virginia.EDU (434) 924-8691 MR4 Building, Room 6071	Physiology

School of Medicine Basic Science Department Chairs

Name/Contact Information	Department
Anindya Dutta	Biochemistry and Molecular Genetics
Fred Epstein	Biomedical Engineering
Doug DeSimone	Cell Biology
Kodi Ravichandran	Microbiology, Immunology, & Cancer Biology
Chris Moskaluk	Pathology
Doug Bayliss	Pharmacology
Mark Yeager	Molecular Physiology and Biological Physics
Jony Kipnis	Neuroscience

BIMS Steering Committee

Name	Department
Amy Bouton	Chair
William Pearson	Biochemistry and Molecular Genetics
Peter Kasson	Biophysics Graduate Program
Michael Lawrence	Biomedical Engineering
Bettina Winckler	Cell Biology
Hervé Agaisse	Microbiology, Immunology, and Cancer Biology
Scott Vande Pol	Pathology
Norbert Leitinger	Pharmacology
Alban Gaultier	Neuroscience
Ignacio Provencio	Neuroscience Graduate Program
Lesley Thomas	Dean's Representative

BIMS Curriculum Committee

TBD

BIMS Admissions Committee (Cluster Chairs)

Cluster	Name	Department
1	Joel Hockensmith	Biochemistry and Molecular Genetics
	Bob Nakamoto	Molecular Physiology and Biological Physics
2	Janet Cross	Pathology
	Ann Sutherland	Cell Biology
3	Brant Isakson	Molecular Physiology and Biological Physics
	Thurl Harris	Pharmacology
4	Barbara Mann	Infectious Diseases
	Lucy Pemberton	Microbiology, Immunology and Cancer Biology
5	TBD	Neuroscience

BIMS Administrators

Name/Contact Information	Degree Granting Program
Debbie Sites der8v@eservices.virginia.edu (434) 924-1997 Jordan Hall, Room 6007	Biochemistry
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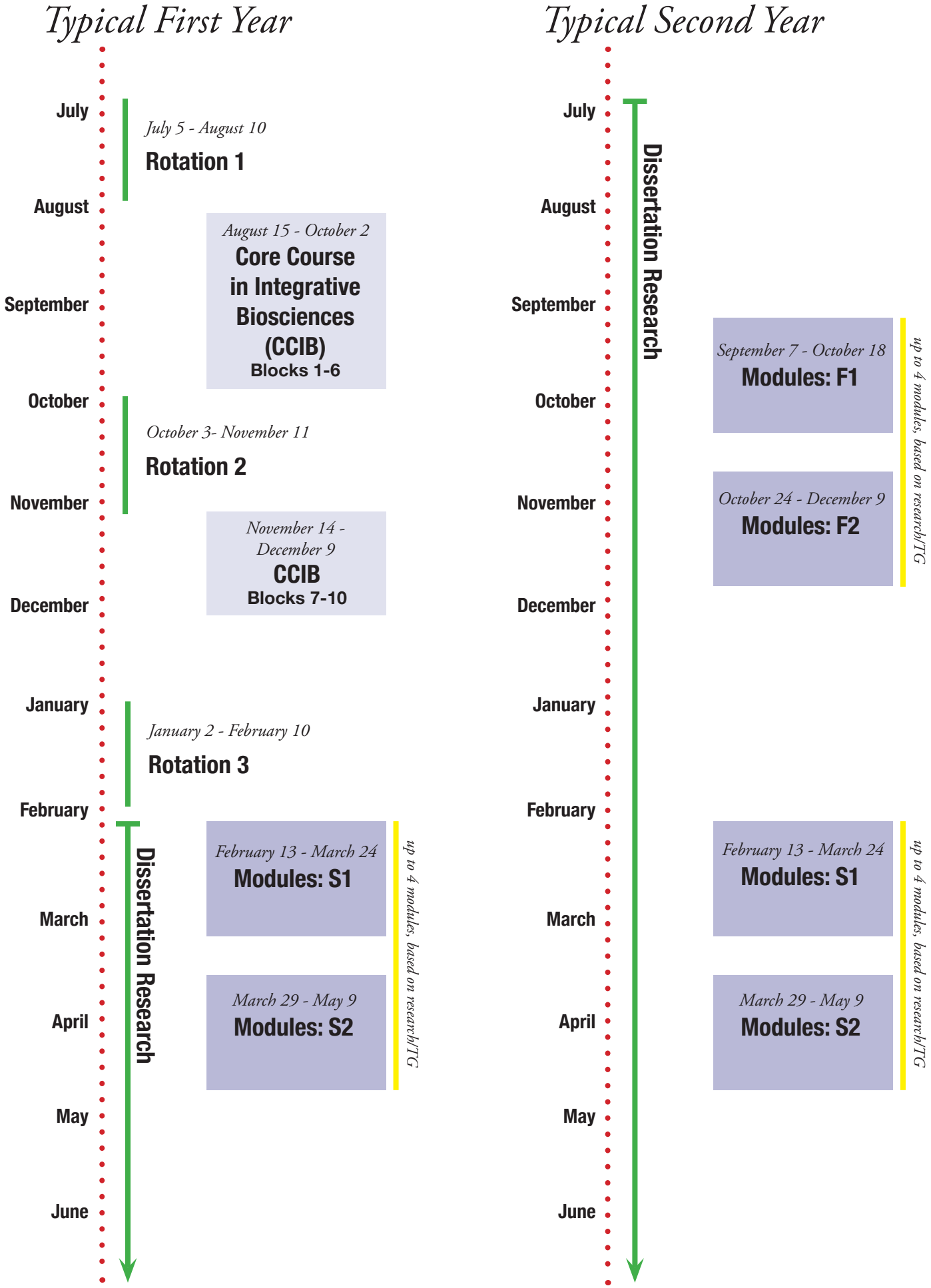
Carrie Walker caw9g@virginia.edu (434) 924-1744 Jordan Hall, 1102	Biophysics Pharmacology
Mary Hall mthall@Virginia.EDU (434) 924-2835 Jordan Hall, Room 3031	Cell Biology Experimental Pathology
Sandy Weirich sww6j@eservices.virginia.edu (434) 243-2776 Jordan Hall, Room 7012	Microbiology
Nadia Cempré nab4g@Virginia.EDU (434) 982-4285 MR-4, Room 6112	Neuroscience

Academic Programs and Requirements

Student Progression Timeline

Figure 1 (next page) illustrates the academic timeline for years 1 and 2 of the typical BIMS student. Students may enroll in up to four total modules each semester, but only two concurrently. The mentor and/or other academic advisor (First Year Advisor or Director of Graduate Studies) should be consulted when selecting coursework. The dates provided for the second year are based on the published 2016-2017 UVa academic calendar and are subject to minor modification in late Spring or early Summer 2017. Occasionally, a student may find it necessary to complete a fourth rotation. That option is not included in the figure, but would begin immediately following the end of *Rotation 3* on the standard timeline. Likewise, students who are unable to start in early July and complete a rotation before the Core Course (BIMS 6000) begins in August would do their third rotation at this point.


Typical First Year
July
August
September
October
November
December
January
February
March
April
May
June
July 5 - August 10
Rotation 1
August 15 - October 2
Core Course in Integrative Biosciences (CCIB)
Blocks 1-6
October 3- November 11
Rotation 2
November 14 - December 9
CCIB
Blocks 7-10
January 2 - February 10
Rotation 3
Dissertation Research
February 13 - March 24
Modules: S1
March 29 - May 9
Modules: S2
up to 4 modules, based on research/TG
Typical Second Year
July
August
September
October
November
December
January
February
March
April
May
June
Dissertation Research
September 7 - October 18
Modules: F1
October 24 - December 9
Modules: F2
February 13 - March 24
Modules: S1
March 29 - May 9
Modules: S2
up to 4 modules, based on research/TG

Advising and Mentoring

First Year Academic Advising

First year students will be assigned a single faculty member, typically an admissions cluster chair, for advising prior to and during the first year. First year students should consult with their assigned advisor and/or other faculty regarding selection of rotations and dissertation lab. The assigned advisor will connect with program leaders and/or other faculty if they lack appropriate scientific expertise in the student's area of interest. They will also work together with Core Course in Integrative Biosciences (CCIB) course directors to monitor performance and develop remediation plans if necessary.

Dissertation Committee

The dissertation committee will consist of not fewer than four members from the graduate faculty, one of whom must be from another department and serves as a representative of the graduate faculty. Once the minimum Graduate School of Arts and Sciences (GSAS) requirements have been met, additional committee members from within the University or from other institutions may be added; however, individuals from other institutions may not serve as the Dean's representative.

Each of the basic biomedical sciences degrees listed later in this section has specific committee requirements that are listed on respective department/program websites.

Responsible Conduct of Research

Honor System

The Honor System at the University of Virginia is student-run; the Honor Committee is comprised of Student Representatives from each of the ten Schools and the College and Graduate School within the University academic system. An honor offense is any intentional act of lying, cheating, or stealing warranting permanent removal from UVA. All students at the University of Virginia are expected to refrain from dishonorable conduct. Incoming BIMS students receive an introduction to the Honor System at the Core Course in Integrative Biosciences (CCIB) Orientation and are required to take Research Ethics (BIMS 7100) in their first year.
http://www.virginia.edu/honor/

Office of Research Integrity

UVA policy requires that you report suspected research misconduct to the Vice President for Research. However, students should seek guidance from the Associate Vice President for Research, Dr. David Hudson, who serves as the Research Integrity Officer (RIO) at UVa. An informal discussion with the RIO may help clarify whether the suspected behavior meets the definition of research misconduct. If it does, the RIO will refer you to other officials with responsibility for resolving the problem. It is difficult to report misconduct by a superior or supervisor; however, the Research Misconduct Policy states that individuals who report allegations of misconduct or of inadequate institutional response thereto must be protected in terms of the terms and conditions of their employment or other status at the University of Virginia, and requires that UVA protect the privacy of those who report misconduct in good faith, to the maximum extent possible.

BIMS Research Ethics Course

All BIMS students are required to enroll and fully participate in the Research Ethics (BIMS 7100) course during the Spring semester of their first year. The course is taught by expert faculty from the University community, using lectures and team-based learning to discuss ethical issues and the responsible conduct of research. Responsible Conduct of Research retraining is available approximately every six months for individuals who have not received formal training in four years.

Coursework

BIMS Core Course

The Core Course in Integrative Biosciences (CCIB; BIMS 6000) is a 12-week course designed to expose first-year BIMS students to the fundamentals of biomedical science. Specifically, the course structure includes traditional lectures as well as small and large group activities that unite the cognitive and behavioral learning that must be mastered for successful matriculation. Students are expected to utilize the assigned text (Alberts, et al. Molecular Biology of the Cell, 6th ed.) as a reference and are assigned journal readings as primary literature in preparation for lectures. Small and large group activities include exercises in a lab setting, critical discussion of journal readings, and solution of various problems (i.e. constructing and deconstructing components of experimental design, etc.). The course is split into two sections, the first taking place from mid-August into early October and the next beginning in mid-November and ending in mid-December. Students are assessed through a variety of short quizzes, writing assignments, and problem sets. A final oral exam will be administered at the end of the course

Modular Courses

Advanced topical courses in BIMS are scheduled as 6-week modules in the Fall and Spring terms (courses and modules are not typically offered in the Summer Session). Modules are listed in the Course Schedule in SIS for two periods each semester. Modules offered in the Fall semester are intended for 2nd year and advanced students (post-qualifying); modules may not be taken concurrently with the BIMS Core Course (BIMS 6000; CCIB). Otherwise, up to four BIMS modules can be taken each semester, with a limit of two per period/session (see timeline in previous section).

The schedule matrix of BIMS modules, including course descriptions, can be found online at http://bit.ly/2aPgcyb

Courses Across Grounds

BIMS students are eligible to take courses in GSAS and in many cases, other UVa Schools anytime during their tenure as a graduate student. Students interested in these opportunities must have permission of their mentor *prior to enrolling*, and may need to seek permission of the course instructor and/or School.

Course Registration

BIMS students are required to be enrolled full-time (12 hours Fall/Spring, 6 hours Summer) for the entire PhD process.

https://sisuva.admin.virginia.edu/psp/epprd/EMPLOYEE/EMPL/h/?tab=PAPP_GUEST

From the SIS home page, please select the link entitled, "SIS HELP, TIPS, DEMOS".
You can watch a short demo (video) or view a printable guide (PDF) on enrollment. These resources will show you how to enroll in classes and provides details regarding adding, dropping, editing and swapping classes.

If you have difficulty registering, please contact your BIMS Administrator.

Graduate School of Arts and Sciences Grading

Letter grades are given in the core course (BIMS 6000), most advanced courses and modules, and some colloquia. The following set of grade symbols is used by the Graduate School (GSAS): A+ (4.0), A (4.0), A- (3.7); B+ (3.3), B (3.0), B- (2.7), C (0.0). Topical courses (i.e., colloquia and lab rotations) and non-topical research can also be graded Satisfactory/ Unsatisfactory (S/U).

According to GSAS regulations, a grade of B- is the lowest satisfactory grade for graduate credit. Furthermore, students must maintain a grade point average of at least 3.0 each academic year in order to be considered by the Graduate School as making satisfactory progress toward a degree. A grade of Unsatisfactory (U) is considered a failing grade.

All students should be aware that although the grade of B- is adequate for general academic credit, it is considered a marginal grade for pre-doctoral students in the BIMS Program. Thus, the grade of B- (or lower) in one or more courses, especially in the first year, will be viewed as an indicator of less than satisfactory progress in the doctoral program and could result in probation and/or suspension.

Degree Requirements

Graduate School of Arts and Sciences

In order to receive a Ph.D. in the Graduate School at UVA, students must complete a minimum of 24 credit hours of graded (scale A, B, etc.) coursework. Specifically for BIMS students, graded credit hours include the required core course (BIMS 6000; 10 credits), advanced topical modules, colloquia, journal clubs, topical research (i.e., BIMS 8995), and lab rotations.

Students must register for a minimum of 12 credit hours each fall and spring semester while matriculated. Beginning with the Spring semester of year one, students should work closely with their mentor, director of graduate studies (DGS), first year advisor, and potentially training grant director to determine which additional modules are required and/or may be beneficial.

Additional information regarding academic regulations for the Graduate School can be found online in the UVa Graduate Record.
http://records.ureg.virginia.edu/content.php?catoid=41&navoid=2617

BIMS-Affiliated Degree Granting Programs

Degree and program requirements listed in this section are subject to change. Students should check with their Director of Graduate Studies prior to course registration to determine if changes have been made.

Biochemistry

https://bmg.med.virginia.edu/graduate-program/bmg-degree-requirements/

The backgrounds of students admitted to the program are diverse, and the program attempts to educate all students up to a level of basic understanding in several areas deemed fundamental to modern biochemistry and molecular genetics. In addition, it is hoped that students will become more expert in areas related to their research, thus gaining a measure of confidence. It is likely that most students would have had (or would make up remedially) calculus, physical chemistry, general chemistry, organic chemistry, physics, genetics, and several courses in biology. They will then be required to satisfy the following departmental requirements:*

Requirements:

- 24 hours (12 credits each semester of first year)
- BIMS 6000 Core Course in Integrative Biosciences
- Minimum of two additional modules (4-6 credits total)
- BIMS 7100 Research Ethics

Journal Club (aka Biochemical Literature) and Colloquium (aka Seminar) – attendance is required following mentor selection and for the duration of the student enrollment in the BMG program.

Qualifying Exam
The student will prepare a research proposal and defend it orally before his or her proposal committee. This exam will be open to the faculty only. The student will be advanced to candidacy for the Ph.D. degree upon a satisfactory performance in this exam.

- Function: to review the student's ability to formulate a research problem and to design a research program aimed at elucidating the problem. A general questioning period will be included on subjects determined by the committee.

- Timing: Must be completed by the beginning (September) of the third academic year. Only special circumstances should modulate this deadline. The proposal is presented to the three member proposal committee.

- Format: The basic elements of a formal faculty research grant proposal should be present. These elements would include: Background and Significance; Specific Aims; and Experimental Design and Methods. The format of the following granting agencies would be appropriate: NIH, NSF, ACS, etc. Unlike most faculty grant proposals, there is no requirement for preliminary results or supporting data from the student. The proposal must contain ideas/hypotheses that are new and untested.

Biomedical Engineering

http://bme.virginia.edu/graduate/index.html
Students are required to complete twenty-four (24) graded credit hours of coursework, plus two Elective Educational Experiences, including:*

- BME 6101 Physiology I for Engineers
- BME 6102 Engineering Physiology II
- BME 6310 Mathematics, Modeling, and computation in Biomedical Engineering
- BME 6311 BME Measurement Principles

*Students in the MD/PhD program or with a prior MS or ME degree in engineering may count some of their prior coursework towards these requirements.

Biophysics

http://www.medicine.virginia.edu/education/phd/scbb-new-biophysics/the-phd-in-biophysics
Courses required for the Ph.D. include:

- BIMS 6000 Core Course in Integrative Biosciences
- BIOP 8201 Biophysical Foundations of Molecular and Cellular Physiology
- BIOP 8301 Molecular Interactions and Driving Forces
- BIMS 7100 Responsible Conduct of Research
- Biophysics and Physiology Journal Club
- At least two Structural Biology modules (Crystallography, Cryo-EM or NMR spectroscopy)

Other requirements

- Students are required to take at least one additional elective module on any topic.
- Students will also be required to attend the Biophysics and Physiology journal club throughout their graduate careers.
- Students entering with a Master's degree will have the same requirements as other students.

Qualifying Exam

Students are expected to write and orally defend the thesis proposal by September 1 at the beginning of the third year. If the student enters with a Master's degree, they are expected to write and orally defend the thesis proposal by January 1 of the second year. For a complete description of the thesis proposal and other details for the program, see the full description of the Requirements for the Ph.D. in Biophysics.

Cell Biology

https://med.virginia.edu/cell-biology/cell-biology-phd/ph-d-degree-requirements/

Courses that are considered to be an essential foundation for research in the field are required. Selection of other advanced modules can be tailored to the particular student's background and research interests. Selections should be made in consultation with the mentor and DGS.

Required modules/courses

- BIMS 6000 Core Course in Integrative Biosciences
- CELL 8101 Introduction to Animal Development
- CELL 8301 Advanced Topics in Cell Biology
- CELL 8450 Effective Science Writing for Grants and Fellowships
- CELL 5950 Journal Club (4 semesters)
- Electives – 1 required
    - CELL 8201 Molecular Mechanisms of Animal Development
    - CELL 8202 Cellular Mechanisms of Animal Development
    - Any BIMS or basic science module or course relevant to the dissertation research

Experimental Pathology

https://med.virginia.edu/pathology/educational-programs/molecular-and-cellular-basis-of-disease-phd-training/

The Department of Pathology offers a Ph.D. in Experimental Pathology through its program titled, *Molecular and Cellular Basis of Disease* (MCBD). Students experience a unique interface among clinical, medical, and basic science realms, while they pursue research designed to elucidate the mechanisms of disease processes and cultivate the skills necessary to perform translational research.

Coursework

The first year will consist of the Core Course in Integrative Biology, Research Ethics, and Topical Research, along with appropriate modular coursework. After selecting a mentor and joining the MCBD Program, students complete coursework, begin their research, and prepare for the qualifying exam. The typical course of study offers numerous opportunities to experience the close interactions between basic scientists and clinical practitioners that foster translational research. These opportunities include both didactic, classroom-based activities and more individualized interactions with faculty through clinical rotations.

A typical second-year curriculum

Fall[1]

- PATH 8130 Topics in the Molecular Basis of Human Disease I
- PATH 8050 Colloquium in Human Disease Research
- PATH 8460 Seminars in Human Disease and Molecular Medicine

Spring[1]

- PATH 8140 Topics in the Molecular Basis of Human Disease II
- PATH 8050 Colloquium in Human Disease Research
- PATH 8060 Rotation in Diagnostic and Interventional Medicine
- PATH 8460 Seminars in Human Disease and Molecular Medicine

[1]*Plus approved didactic electives and coursework required by training grants, if applicable*

Additional opportunities are available for students to supplement their training activities throughout their time in the MCBD program. Examples include workshops to define the concepts and processes involved with patents/intellectual property, and to develop skills necessary for grant writing/review.

Qualifying Exam: Written and oral components

Students are required to complete a written exam, similar in style to an NIH grant proposal, detailing the student's research plan. Students are required to submit written copies of this proposal to their respective Graduate Committee members two weeks prior to the qualifying exam.

The oral Qualifying Exam for the MCBD Program is a successful defense of the thesis project before the student's Graduate Committee. Students must meet this requirement by June 30th, at the end of the student's second year.

Further research leading to first author papers

These papers are to be published in high-quality, peer-reviewed journals appropriate to the student's field of study.

Microbiology

http://mic.med.virginia.edu/graduate-studies/

The student's course selection will be made to fulfill MIC PhD and NIH training program requirements. The basic requirements for a Microbiology degree are as follows:

- BIMS 6000 Core Course in Integrative Bioscience
- Four (4) advanced modules (At least 2 of these must be MIC specific modules – see below)
- BIMS 7100 Research Ethics
- MICR 8006 Continuing Colloquium in Microbiology (Spring semester; primary literature is read, presented, and discussed)
- MICR 8000/8001 Seminars in Microbiology (Attendance at weekly MIC Departmental Seminars is required for 4 semesters during years 1-3 of the Microbiology PhD studies)

Six week modular courses may be taken concurrently and/or sequentially. All coursework can potentially be completed in the first year of graduate studies, or students and their mentors may choose to spread the coursework over the second and third years.

Students can formally enroll in classes offered by BIMS/SOM basic sciences departments and across Grounds throughout their tenure as a graduate student. It is necessary, however, to obtain permission from your mentor before enrolling in any formal coursework outside of your degree requirements.

MIC Specific Modules:

- MICR 8040 Fundamentals in Cancer Biology
- MICR 8042 Advanced Topics in Cancer
- MICR 8044 Cancer Signaling and Therapeutics
- MICR 8200 Building Blocks of the Immune System
- MICR 8202 Integration and Diversification of the Immune System
- MICR 8204 Current Topics in Immunology
- MICR 8341 Biological Threats and Public Health
- MICR 8400 Bacterial Genetics and Physiology
- MICR 8401 Microbial Pathogenesis
- MICR 8402 Microbial Pathogenesis Proposal Preparation

MIC Qualifying Exam

Toward the end of the second year, each student must prepare a written document and orally defend the detailed research proposal in the form of a "qualifying exam." Ph.D. candidates are required to successfully prepare and defend the proposal before July 1st of the second year in order to remain in good standing as a Ph.D. candidate, and to continue receiving financial support from the Department. MSTP students are required to successfully prepare and defend the proposal before Oct. 1st of the first grad-year. One of the faculty with a primary microbiology appointment (not your mentor) should serve as the chairperson or first-reader of the committee. The student's mentor will be an essentially silent member of the committee during the oral defense of the qualifying exam.

It is not uncommon for a proposal to require revision, and perhaps a second committee meeting, before a student is passed into candidacy. Any need for revision is considered a "qualified pass". Successful completion of the Qualifying Exam and any revisions allows the student to advance to candidacy for the Ph.D. degree. Those not admitted to candidacy may, on approval of the MIC faculty, be permitted to complete the requirements for the degree of Master of Science in Biological and Physical Science.

Neuroscience

http://www.uvaneuro.com/

The curriculum for NGP students is outlined below. While most students will follow this outline, flexibility is possible if the student enters the program with a demonstrated expertise that would make specific course work in a given area unnecessary.

All first year students are expected to enroll in the following classes:

- BIMS 6000 Core Course in Integrative Biosciences (CCIB)
- NESC 7030 Molecular, Cellular and Developmental Neuroscience
- NESC 7060 Fundamentals Of Neuroscience
- NESC 7200 Behavioral and Cognitive Neuroscience
- NESC 8250 Molecular Basis of Neurological Disorder
- NESC 8010/8020 Seminar in Neuroscience
- NESC 8080 Neuroscience Graduate Student Seminar Series

Second year Coursework:
The modular system of classes will offer the second year student the opportunity to individualize that student's learning plan as appropriate for their research.

- BIMS 8998 Non-Topical Research: Research in Biomedical Sciences
- NESC 8010/8020 Seminar In Neuroscience
- NESC 8080 Neuroscience Graduate Student Seminar Series
- MICR 8380 Practical Use of Statistics In Biomedical Research
- BIMS 7100 Research Ethics

Pharmacology

http://pharm.virginia.edu/current-students/

The Ph.D. program in Pharmacology is designed to provide students with training in the Pharmacological Sciences and prepare them for a career in modern biomedical research. Our program begins with two years of didactic course work. This includes the required BIMS core coursework, advanced coursework in Pharmacology, and courses from the allied sciences (e.g., cell biology, biochemistry, genetics, physiology, microbiology, anatomy, and medicinal chemistry). The first year, as an undeclared Biomedical Sciences (BIMS) student, includes rotation through three research laboratories and completion of the BIMS core course work. Near the end of first year, each BIMS student will choose a mentor and declare a degree department. During the second year of study, Pharmacology students will complete the required course work and prepare for the qualifying examination.

Program Participation

Students will regularly attend and actively participate in department events, including Journal Club, the Seminar Series, and the annual department retreat.

Coursework

All Pharmacology students* are required to take the following courses:

- BIMS 6000 – Core Course in Integrative Bioscience
- BIMS 7100 – Research Ethics
- PHY 8040 – Physiology A
- PHY 8041 – Physiology B
- PHAR 9001 – Intro to Pharmacology
- PHAR 9002 – Intro to Neuropharmacology
- PHAR 9003 – Molecular Targets
- PHAR 9004 – Discovering Drugs
- BIMS 8380 – Practical Statistics in Biomedical Research
- PHAR 8110/8120 – Pharmacology Journal Club
- PHAR 7010/7020 – Pharmacology Seminar
- 2 elective modules

**MSTP students are exempt from several course requirements. Please consult with the Pharmacology Graduate Advisor.*

Advancement to Candidacy and Qualifying Exam

At the end of the second year of study, students are required to prepare and defend a qualifying examination. The Advancement to Candidacy Exam must be completed no later than July 15 of the summer following the second year of graduate study. Exam applications are due April 1 (in the second year, spring semester). The Advancement to Candidacy Exam is comprised of two parts: a grant-style written document, or proposal, and an oral examination/defense of this document. Five Examination Committee members (three Pharmacological Sciences Training Grant Preceptors and two Pharmacology Graduate Committee Members) selected by each student in consultation with his or her mentor will evaluate both parts of the exam. The Graduate Committee will make the final decision concerning each student's eligibility for Advancement to Candidacy in the Ph.D. program. Advancement to Candidacy is based on each student's overall performance in the program, including research rotations, coursework, participation in department and program activities, and the results of the qualifying exam.

Committee Meetings

After advancing to candidacy and forming the Dissertation Committee, students are required to have at least two Committee Meetings per year, usually in January and July. IDPs will be reviewed at the July Committee Meeting.

Publications

After advancing to candidacy, students will concentrate on conducting independent research under the guidance of a mentor and dissertation research committee. The student's research is expected to advance some field of biomedical sciences. As evidence of this level of achievement, students will publish research papers, including some as first author, and these papers will appear in recognized, peer-reviewed journals.

Dissertation
The culmination of the student's research endeavor is a written dissertation that is presented publicly, and then defended orally before a faculty committee. The final examination for the degree of Doctor of Philosophy is devoted entirely to defense of the dissertation by the candidate.

Student progress through the program is guided at all times by a committee of faculty advisors and is reviewed at least twice a year by the student's dissertation committee. This training experience allows students to earn the Ph.D. in Pharmacology in four or five years.

Physiology
http://physiology.med.virginia.edu/graduate-program.html

In addition to CCIB (BIMS 6000), 8 additional modules are required:

- PHY 8040 Physiology A
- PHY 8041 Physiology B
- BIOP 8201 Biophysical Foundations of Molecular and Cellular Physiology
- PHAR 9001 Introduction to Pharmacology
- PHAR 9002 Introduction to Neuropharmacology
- At least one more graduate level module offered within the Department of Physiology is required.
- The last two modules can be from any graduate level course (to be determined by the mentor and student).

Pre-Doctoral Training Programs

Within the overall BIMS structure, there are a variety of NIH-sponsored training programs that provide opportunities for advanced study and intellectual community after Year-1. Appointments to a training grant are awarded based on a combination of the student's undergraduate record and performance during the first year of graduate school. Typically, students are nominated for training grant positions at the end of Year-1 in late April, and selections are made by mid-May.

Individual training programs have eligibility requirements and expectations for student participation in programmatic activities beyond those that have been stipulated as part of the BIMS and degree granting programs. The following is the list of training program opportunities, including specific requirements for each. Students should check with the relevant training program director prior to course registration to determine if changes have occurred since the publication of this handbook (August 2016).
http://bims.virginia.edu/nih-sponsored-training-programs/

Training Program Nomination Process

The nomination process opens in April every year with a deadline in early May. Faculty mentors affiliated with each NIH training program (preceptor appointments vary according to research initiatives in the mentor's lab) are sent instructions by e-mail and work with eligible students (typically 1st and 2nd year) to secure the requisite nomination materials.

Tips to help students navigate this process:

- Develop a curriculum vitae (CV) in consultation with your mentor.
- Rotation evaluations are submitted on your behalf as part of the nomination packet (unless prohibited by the evaluator).
- Many training programs require letters of support from faculty other than your mentor – as part of your professional development, you should begin cultivating relationships with a number of faculty within and outside your research area early in your first year.
- Most NIH training programs require a statement of purpose or description of your intended research. While it is impossible to write this statement until you have selected a lab for dissertation research, practicing this skill early and seeking feedback will be beneficial.

Training Program Requirements

Information listed in this section is subject to change.

Biodefense Training Program

http://www.medicine.virginia.edu/education/phd/biomedical-sciences-graduate-studies/nih-training-programs/biodefense

Director
Bill Petri wap3g@virginia.edu

Trainees are required to attend and present at the following:

- ID &BD Research in Progress (3rd Tuesday of month)
- ID & BD Journal Club (2nd Friday of the month)
- Annual Research Day (usually Feb or March)
- ID/BD seminar series (1st, 2nd, and 4th Tuesdays)

Required Coursework

- MICR 8200 – Building Blocks of the Immune System
- MICR 8202 – Integration and Diversification of the Immune System
- MICR 8400 – Molecular Principles of Bacteriology & Virology
- MICR 8401 – Microbial Pathogenesis
- MICR 8402 – Microbial Pathogenesis Proposal Preparation
- BIMS 7100 – Research Ethics
- MICR 8341 – Biological Threats and Public Health

Highly Recommended Coursework

- BIMS 8380- Practical Use of Statistics in Biomedical Research

Biomedical Data Sciences Training Program

http://bme.virginia.edu/bds/index.html

Director
Jason Papin jap8r@virginia.edu

We aim to prepare the next generation of scientists and engineers to address the monumental challenge of multi-type biomedical big data manipulation, analysis, and interpretation. We propose a curriculum and a set of programmatic activities to create an interdisciplinary training ground wherein teams of students will work across key disciplines, benefit from a true co-mentoring and interdisciplinary environment, and develop the technical and leadership skills necessary to succeed as independent scientists making groundbreaking new discoveries enabled by biomedical big data.

Appointed trainees are required to take the following:

- Course 1: Biomedical Big Data Computational Foundations
- Course 2: Big Data Analytical Tools
- Course 3: Biomed Big Data Domain-Specific Training
- Course 4: BD Experimental Design & Reproducibility
- Course: BIMS 7100, Responsible Conduct of Research

Trainees are required to attend and present at the following:

- Collaborative Foundations Lunches - 3 in August, monthly Sept-Apr
- Travel: BD to Knowledge Conference Nov. 29- Dec. 01 in DC
- Collaborative Analytics Workshop - tbd
- Collaborative Jamboree/ hackathon - spring 2017 (in conjunction with DSI spring data summit)
- DSI Spring Data Summit - tbd
- Collab Visualization Workshop with E. Field - tbd
- TG volunteer activities: Twitter, calendar, etc.
- Application for external funding

Biotechnology Training Program

http://faculty.virginia.edu/biotech/Home.html

Director
Gordon Laurie gwl6s@virginia.edu

Required Coursework

- CELL 8401 The Essentials of Translational Science
- BIMS 8380 Practical Use of Statistics in Biomedical Research, ***or***
- APMA 6430 Statistics for Engineers and Scientists

Externship
Required practical experience in a private company setting; 2-3 months

Cancer Training Program

http://bims.virginia.edu/nih-sponsored-training-programs/cancer-research/

Director
Amy Bouton ahb8y@virginia.edu

Appointed trainees are required to take the following:

- MICR 8040 Fundamentals in Cancer Biology
- MICR 8044 Cancer Signaling and Therapeutics
- MICR 8042 Advanced Topics in Cancer

RECOMMENDED: 1 additional module from among the following:

- BIOC 8012 Chromatin I
- BIOC 8014 Chromatin II
- PATH 8300 Tumors and the Immune System

Cardiovascular Training Program

http://training.cvrc.virginia.edu

Director
Gary Owens gko@virginia.edu

Appointed trainees are required to take the following:

- BIOP 8052: Vascular Biology A
- BIOP 8053: Vascular Biology B
- BIOP 8040: Physiology A
- BIOP 8041: Physiology B
- CVRC Seminars
- Cardiovascular Research - theory, practice and methodology
- CVRC Research in Progress

Cell and Molecular Biology Training Program

https://research.med.virginia.edu/cell-and-molecular-biology/

Director
Todd Stukenberg pts7h@virginia.edu

The Cell and Molecular Biology Training Grant appointment is usually for two years, but is dependent upon the student and mentor participating in the various programmatic activities.

Appointed trainees are required to:

- Attend the CMB data dinners
  – Write an abstract and send it to Debbie Sites
  – Work on talk with faculty coach
- Include a member of the steering committee on committee
- Attend two "Medical Center Hours" per year
- Participate in the CMB Hike
- Participate in the CMB retreat in the Spring
- Complete the following coursework
  – Advanced Topics in Cell and Molecular Biology (CELL8301)
  – Effective Science Writing for Grants and Fellowships (CELL 8450)
  – Practical Use of Statistics in Biomedical Research (BIMS 8380)

Immunology Training Program

https://research.med.virginia.edu/itp/

Director
Vic Engelhard vhe@virginia.edu

Appointed trainees are required to take the following:

- MICR 8200 Building Blocks of the Immune System
- MICR 8202 Integration and Diversification of the Immune System
  AND 2 additional modules (for credit) from among the following:
- MICR 8204 Current Topics in Immunology
- PATH 8280 Clinical Immunology and Immunopathology
- PATH 8300 Tumors and the Immune System

Infectious Diseases Training Program

https://med.virginia.edu/infectious-diseases/fellowship-education/id-fellowships-phd/

Director
Bill Petri wap3g@virginia.edu

Trainees are required to attend and present at the following:

- ID & BD Research in Progress (3rd Tuesday of month)
- ID & BD Journal Club (2nd Friday of the month)
- Annual Research Day (usually Feb or March)
- ID/BD seminar series (1st, 2nd, and 3th Tuesdays)

Required Course work:

- MICR 8200 - Building Blocks of the Immune System
- MICR 8202 - Integration and Diversification of the Immune System
- MICR 8400 - Molecular Principles of Bacteriology & Virology
- MICR 8401 - Microbial Pathogenesis
- MICR 8402 - Microbial Pathogenesis Proposal Preparation
- BIMS 7100 - Research Ethics

Highly Recommended Courses:

- MICR 8341 - Biological Threats and Public Health
- MICR 8380 - Practical Use of Statistics in Biomedical Research

Molecular Biophysics Training Program

https://med.virginia.edu/biophysics-program/

Director
Bob Nakamoto rkn3c@Virginia.EDU

Required Course work:

- Biophysical Foundations of Molecular and Cellular Physiology
- Molecular Interactions and Driving Forces (Peter Kasson and Michael Wiener)
- Biophysics and Physiology Journal Club
- Biology at Atomic Resolution: Foundations of Crystallography
- One additional elective module on any topic.

Trainees are required to attend and present at the following:

- Students will also be required to attend the Biophysics and Physiology journal club throughout their graduate careers.
- Students must maintain a graduate GPA of at least 3.0.
- Students entering with a Master's degree may request an exemption from the Core Course in Integrative Biosciences if previous graduate course work and research experience are deemed comparable. One or two of the rotations may be waived if the student has previous experience in the lab.

Neuroscience Training Program

http://www.uvaneuro.com/

Director
TBD

Pharmacology Training Program

http://bims.virginia.edu/nih-sponsored-training-programs/pharmacological-sciences/

Director
Kevin Lynch krl2z@virginia.edu

Students appointed to the PSTG are required to attend and actively participate in the Pharmacology Journal Club (Tuesdays at noon) and the Pharmacology Seminar Series (Thursdays at 4:00 p.m.) during their term of appointment. PSTG trainees are also required to matriculate in BIMS 7100: Research Ethics, BIMS 8380: Practical use of Statistics in Biomedical Research, and at least one Pharmacology Course Sequence (Either PHAR 9001 and 9002, Intro to Pharmacology and Intro to Neuropharmacology, or PHAR 9003 and 9004, Molecular Targets and Discovering Drugs) either prior to or during their term of appointment.

Graduation Requirements

Degree Requirements and Procedures for Completing the PhD Degree
All students are strongly encouraged to review their academic records at least once a year to confirm that all courses and directed research hours are listed appropriately (to include grades). Courses and directed research hours (topical or non-topical) with no grade or a grade of IN (incomplete) are changed to failing grades after one semester. Grades on the student's official record at graduation are final and cannot be altered after the degree is conferred.

In addition to the degree requirements listed in the previous section and online, all PhD candidates must meet requirements set by the Graduate School of Arts and Sciences. Further, all students must follow the procedures and guidelines established by the Graduate School regarding the final defense, dissertation submission, and application for graduation. The established basic requirements for the Doctor of Philosophy from the Graduate School of Arts and Sciences can be found online:
http://gsas.virginia.edu/enrolled-students

Financial Support

Stipend/Health Subsidy/Tuition

All BIMS graduate students are assured support for all years of doctoral study and research, contingent on satisfactory progress in the program. Such support is based on a twelve-month award that includes an annual stipend, full payment of tuition and fees, and a health insurance subsidy. The stipend is paid in the form of a fellowship, traineeship, teaching assistantship, research assistantship or a combination of these.

Beginning in the summer after the first year, if a student is not supported by a training grant or external fellowship, she/he is generally supported as a graduate research assistant with funds derived from the research grants of her/his mentor. Support for students in the sixth year and above is dependent on the availability of research funds from the mentor or of institutional funds.

Health Subsidy

All students are required to have health insurance. The University of Virginia has contracted with Aetna to provide health insurance for students. The premium for this coverage is paid directly through Student Financial Systems and is considered a health subsidy. Additional information about the policy and coverage details can be found on the UVa Student Health: http://www.virginia.edu/studenthealth/insurance.html

Questions regarding parent/spouse plans or other related issues should be directed to your BIMS administrator.

Withholding/Taxes

State and federal taxes are withheld from bi-weekly stipend payments (wages) that are processed through Human Resources. The amount of withholding is based on information submitted on VA-4 and W-4. W-2's are mailed in late January, but can also be obtained online earlier. State and federal taxes ARE NOT withheld from monthly fellowship stipend payments (method used for training grants and NRSA individual fellowships), so a W-2 WILL NOT be issued. Reporting fellowship income to the Internal Revenue Service is the responsibility of the student.

Tax Resources

- UVa Law School student volunteers and UVa Human Resources have partnered to provide free assistance to members of the University community who earn $50,000 or less annually: http://www.hr.virginia.edu/
- Student Financial Services http://sfs.virginia.edu/grad/stipends
- The Internal Revenue Service also provides details regarding graduate student financial aid in IRS Publication 520.

Student Life

Student Organizations

Graduate Biosciences Society (GBS)

The Graduate Biosciences Society (GBS) comprises the graduate students in biomedical sciences degree - granting programs offered under the heading of the University of Virginia Graduate School of Arts and Sciences.

Mission Statement

The purpose of the GBS shall be to enrich the academic, professional, service, and social aspects of graduate student life for those who fall under its membership. The purpose of the GBS Executive Council shall be to represent and promote the interests of the GBS and to foster the relationship between the GBS members and the University administration, faculty, alumni, and students, as well as the outside bioscience community. The Council shall strive to create a fellowship amongst the bioscience disciplines represented by its membership. The Council shall accomplish this fellowship by promoting engagement and collaboration between these disciplines through academic, professional, social, and service opportunities.

2016-2017 Executive Council

President – Michael Schappe	ms9xb@virginia.edu
Vice President – Molly Kelly-Goss	mrk2cc@virginia.edu
Treasurer – Kathy Michels	krm4xz@virginia.edu
Secretary – Tori Osinski	vo3sc@virginia.edu

Examples of GBS events and activities

- Orientation welcome picnic
- Regular happy hours
- GBS4 student talks
- GBS-sponsored faculty poster session
- Career panels and biotech site visits
- Spring symposium
- Service activities

How to get involved

Each spring we hold elections for the executive council, and ask for volunteers to become involved as department representatives, GBS4 coordinators, or be members of the publicity, social, or academic and professional committees. We also ask for committee volunteers in the Fall and first year representatives at the start of the academic term in the Spring.
http://www.medicine.virginia.edu/education/more/graduate-biosciences-society
https://www.facebook.com/uvagbs
https://www.linkedin.com/groups/3284883

Women in Math and Science (WIMS)

Our goals are to provide support and guidance for female mathematicians and scientists at the University of Virginia; to create awareness of issues affecting career development and success; to centralize resources available for career and personal development; and to promote service outside of the University community for young scientists.

2016-2017 Executive Council

President – Irene Cheng	ic5mz@virginia.edu
Academic and Development Chair – Kelly Barford	kab7va@virginia.edu
Outreach Coordinator – Laura Sipe	lms3qc@virginia.edu
Social Chair – Katrina McNeely	ko4ek@virginia.edu
Treasurer – Abagail Rosen	amr3hu@virginia.edu

Examples of WIMS activities

- The WIMS 4-miler team raised money for breast cancer therapy and had a great run
- Women in Science Stories: a lunchtime seminar series that brings together women from academics and industry to discuss their paths and struggles in science
- Social/happy hour once per semester
- Elementary School Outreach: WIMS visits Red Hill Elementary School 3-4 times per year to do interactive experiments
- Participate in local science fairs and exhibitions
- Pioneered the GSASC Parental Leave policy
- Fill Christmas stockings with our Stocking Drive for teenage girls
- Habitat for Humanity Build Days at least once per semester
- Lots of other fun events!

How to get involved

WIMS is a group of people who think women can be great and valuable scientists. Therefore, we support women in their science-related endeavors and are open to all genders. Each year WIMS holds elections for President, VP and Treasurer. We have many group members take on the organization of individual projects that they are interested in, and we have general planning meetings once per semester. To hear more about WIMS activities, join the WIMS listserv: https://lists.virginia.edu/sympa/info/women_sci or check out our website (https://med.virginia.edu/women-in-math-and-science/).

Facebook: WIMS @ UVA https://www.facebook.com/wimsuva?ref=aymt_homepage_panel

Activities

Intramural sports

- More information is available at: http://www.virginia.edu/ims/
- Teams with >50% students from the Graduate School of Arts and Sciences can get team support. *For more information, visit:* http://pages.shanti.virginia.edu/gradcouncil/funding-requests/im-funding-request/

UVA sporting events

Students get into UVA sporting events for free with their student ID. Visit their website for a list of home games: http://www.virginiasports.com

Local venues and events

GBS has a compiled a list of restaurants, local events, and other activities to check out in Charlottesville and the surrounding area. As first years, you should all receive this list. If you missed it, feel free to contact any of the GBS executive chairs or the Service & Outreach committee to get a copy. See you around C'ville!

BIMS and School of Medicine Awards

Student

Michael J. Peach Award

Michael J. Peach, Ph.D. joined the UVA faculty in 1968, where he made a major contribution to our understanding of the regulation of blood pressure and the treatment of cardiovascular disease. He was a Professor of Pharmacology and UVA Medical School's Associate Dean for Research. His research on hypertension was recognized throughout the world. While he died at a very young age, Dr. Peach mentored 17 graduate students and 25 postdoctoral fellows. His influence did not stop there, however. He had the unique ability to bring people together as colleagues in science and he put a great deal of energy into interacting with clinicians. He enjoyed helping others with their work and providing constructive criticism. His colleagues were amazed by his knowledge, his thought process, and his ability to provide direction. He had great skill in forming groups that were able to accomplish much more as a team than they could as individuals. As a memorial to Michael Peach, an annual award is given to a graduate student each year who embodies enthusiasm for research and the principles of sharing and collaboration, which were central to Dr. Peach's approach to science and medicine. The recipient receives a merit stipend and has his or her name placed on an award plaque displayed in the Graduate Programs Office in UVA's Jordan Hall.

Jill E. Hungerford Prize in Biomedical Sciences

The Jill E. Hungerford, Ph.D. Prize in Biomedical Sciences was created by Jill's parents after her life was tragically cut short by cancer at the age of 34. By doing so, their goal is to nurture in others that same dedication to science that they saw in Jill. Jill earned her doctorate in physiology in 1995 from UVA, where her research focused on smooth muscle cell development in the walls of blood vessels. In 1997, Jill left UVA to continue her research at Yale University, where she concentrated on developmental biology of the cardiovascular system, especially integrating vascular physiology to define the fundamental relationships between structure and function in the developing vessel wall. Jill was a committed and passionate researcher, constantly seeking to broaden our scientific knowledge. In addition to her scientific achievements, Jill consciously worked to become a positive role model for other young women in science. The Jill E. Hungerford, Ph.D. Prize is awarded annually to a doctoral student at Graduate Biosciences Research Day. The recipient receives a merit stipend and has his or her name placed on an award plaque displayed in the Graduate Programs Office in UVA's Jordan Hall.

Robert R. Wagner Fellowships

The Robert R. Wagner Fellowship was established in 1997 by Dr. Robert R. Wagner and his wife Mary to provide fellowships to graduate students in the basic sciences in the School of Medicine. These fellowships are awarded on a competitive basis to rising 3-5th year BIMS students, and include full support for the student, a one-time $1,000 stipend bonus, and $1,000 toward professional development.

Faculty

Robert J. Kadner Award for Outstanding Graduate Teaching

Purpose: This award was established in honor of Robert J. Kadner, PhD, Norman J. Knorr Professor of Microbiology, who served as the senior founding Chair of the Academy of Distinguished Educators until his death in August of 2005. Robert Kadner devoted his 35-year career at the University of Virginia to the pursuit of outstanding teaching, training and mentorship of graduate students, postdoctoral fellows and young faculty. This award recognizes faculty in the School of Medicine who have made outstanding and long-standing contributions to teaching and mentoring PhD candidates and/or postdoctoral fellows with MD or PhD degrees pursuing careers in basic and/or clinical laboratory research.

Who is eligible? Nominees must be faculty members of the School of Medicine with a rank of Associate Professor or above, who are engaged in basic or clinical laboratory research, been a faculty member at University of Virginia for at least 5 years, and demonstrate a strong commitment to teaching in both the classroom and laboratory setting. Faculty members who have received the Kadner Teaching Award within the last 3 years are not eligible.

Who may nominate? The primary nominator must be a graduate student, postdoctoral fellow, or clinical fellow.

For more information on nominating a faculty member, please see:
http://faculty.med.virginia.edu/facultyaffairs/honors/deans-office-awards/kadner-award/

Dean's Excellence in Teaching Award

This award recognizes faculty who excel in teaching students, exhibiting excellence in the classroom, laboratory mentoring, as a small group discussion leader, course director, and/or mentor. Who may nominate? Any student may nominate one fulltime faculty member.

For more information on nominating a faculty member, please see:
http://faculty.med.virginia.edu/facultyaffairs/honors/deans-office-awards/teaching-excellence-award/

Graduation and Diploma Presentation

The University of Virginia confers degrees in December, August, and May; however, graduation exercises at the University of Virginia are held only in May. Students who complete degree requirements for August and December of the immediate preceding calendar year may participate in graduation and diploma presentation ceremonies in May (i.e., August and December 2016 can march in May 2017). BIMS hosts one of many diploma presentation ceremonies held the weekend of Final Exercises (UVA's term for graduation). Students who matriculate through the Neuroscience, Biomedical Engineering, and Biology programs have the option of attending the relevant separate ceremony in lieu of the BIMS ceremony. Additional information is posted online.

http://www.virginia.edu/finals/

Appendix A: 2016-2017 Academic Year Schedule

BIMS First Year

July 1-4	Preferred start time for first year BIMS students
July 5 - Aug 10	FIRST ROTATION (7/7 – 8/9, Meet the Faculty breakfasts)
July 6	Introduction/orientation to summer activities
Aug 15 - Oct 2	CORE COURSE (Blocks 1-6) (**Aug 11-12** orientation)
Oct 3 - Nov 11	SECOND ROTATION
Nov 14 - Dec 9	CORE COURSE (Blocks 7-10)
Nov 23 - Nov 27	Thanksgiving Break
Dec 10 – Dec 14	**Reading Days**
Dec 15 - Dec 16	CORE COURSE FINAL EXAM
Dec 17 - Jan 1	Christmas Break
Jan 2 - Feb 10	THIRD ROTATION
Feb 13 - Mar 24	MODULES (S-1) Spring 1 final exams March 27-28
Mar 29 - May 9	MODULES (S-2) Spring 2 final exams May 10-12

BIMS Second Year

Sept 7-Oct 18	MODULES (F-1) Fall 1 final exams October 19-21
Oct 24-Dec 9[1]	MODULES (F-2) (no class Nov. 21-27) Fall 2 final exams December 12-14 [1]No meetings during Thanksgiving week
Feb 13-Mar 24	MODULES (S-1) Spring 1 final exams March 27-28
Mar 29-May 9	MODULES (S-2) Spring 2 final exams May 10-12

Appendix B: Individual Development Plan (IDP)

Appendix C: Seminars, Journal Clubs, RIPs

2016-2017 Distinguished Lectures

Robert J. Kadner Distinguished Lecture in Microbiology
http://mic.med.virginia.edu/kadner/

Beirne B. Carter Distinguished Lecture
https://research.med.virginia.edu/cic/events/the-beirne-b-carter-annual-lecture/

Biochemistry and Molecular Genetics Annual Symposium
http://bmg.med.virginia.edu/events/past-symposia/

Biotechnology Training Program Biennial Symposium
http://faculty.virginia.edu/biotech/Seminars.html

Joseph Larner Memorial Lecture in Pharmacology – Thursday, October 6, 2016
https://pharm.virginia.edu/news-and-events/seminar-series/

Department Seminar Schedule

	Monday	Tuesday	Wednesday	Thursday	Friday
9:30 am				Pharmacology	
12:00 pm		Experimental Pathology	Cell Biology	Biochemistry and Molecular Genetics --- Cardiovascular Research Center --- BIG Seminar	Biology Cancer Center *12:30-1:30*
2:00 pm				Chemical Engineering	Biomedical Engineering
4:00 pm	Beirne B. Carter Center for Immunology Research --- Molecular Physiology and Biological Physics	Neuroscience Graduate Program	Microbiology, Immunology, and Cancer		Chemistry

Department Seminar Contacts

Beirne B. Carter Center for Immunology Research: *Shawn Wood sww2p@virginia.edu*

BIG Seminar: *Morgan Furr Mlf9r@virginia.edu*

Biochemistry and Molecular Genetics: *Nancy Rush nr9b@virginia.edu*

Biology: *Debbie Snow dam3f@virginia.edu*

Biomedical Engineering: *Angel Thompson angelt@virginia.edu*

Cancer Center: *Susan Fnu fs3w@Virginia.EDU*

Cardiovascular Research Center: *Katharine Sutphen ks3qs@virginia.edu*

Cell Biology: *Lea Moore lam9z@virginia.edu*

Chemical Engineering: *Vickie Faulconer vsf6m@virginia.edu*

Chemistry: *Cindy Knight csk3a@virginia.edu*

Experimental Pathology: *Susan G. Bywaters sab6j@virginia.edu*

Microbiology, Immunology, and Cancer: *Regina Seitz rmm5m@virginia.edu*

Molecular Physiology and Biological Physics: *Allison Robinson alr5s@virginia.edu*

Neuroscience Graduate Program: *Nadia Cempré Nab4g@virginia.edu*

Pharmacology: *Jolene Kidd jaa3q@virginia.edu*

Department & Interdisciplinary Program RIPs and Journal Clubs

	Day/Time	Contact
Pathology Research Progress Report (PRPR)	Second and Fourth Monday of the month 12:00PM	Michael Kidd mwk2c@Virginia.EDU
Pathology Journal Club	First and Third Monday of the month 12:00PM	Michael Kidd mwk2c@Virginia.EDU
Cell Biology Data Club Dinner	First Monday of the month 5:30PM	Ryan Haskins rmh5bc@virginia.edu
Biochemistry Journal Club	Tuesday 12:00 PM	Yuh-Hwa Wang yw4b@virginia.edu
Pharmacology Journal Club	Tuesday 12:00PM	Tammy Snow tjs3n@virginia.edu
Microbiology Colloquium	Tuesdays 12:00-1:00 and Fridays 3:30-5:00	Lucy Pemberton lfp2n@virginia.edu
Infectious Diseases and Biodefense Research In Progress (RIP)	Third Tuesday of the month at 4:00PM	Barb Mann bjm2r@virginia.edu
Neuroscience Student Seminar Meeting of the M.I.N.D.S.	Tuesday 5:00PM	Nadia Cempré nab4g@virginia.edu
Neuroscience Journal Club	TBD	Nadia Cempré nab4g@virginia.edu
Immunology Research In Progress (RIP)	Wednesday 12:00PM	Peggy Morris pem7f@virginia.edu
Cancer Research Journal Club	Second and Fourth Thursday of the month 12:00 PM	Roger Abounader ra6u@Virginia.EDU
Molecular Physiology and Biological Physics Journal Club	Friday 12:00PM	TBD
Infectious Disease and Biodefense Translational Journal Club	Second Friday of the month 12:00PM	Barb Mann bjm2r@virginia.edu
Cell Biology Journal Club/RIP	Thursday, 1:00PM	Mary Hall mth8n@virginia.edu
Genomics Journal Club	TBA	Bill Pearson wrp@virginia.edu

Appendix D: Things to consider when choosing a mentor

Choosing the right lab for your thesis is a complex process. You will be considering issues that vary widely, including mentorship, the general research topic, specific potential projects, funding in the lab, and the personality fit between you, the PI, and the lab. In order to help, current BIMS students have drafted some questions they considered, advice they received, and papers they read.

Questions to ask yourself when deciding on a mentor

These questions are important to consider on your own and can serve as good topics of discussion with your first year advisor, potential mentors, the faculty member leading your recruitment cluster, your Assistant and Associate Dean, DGS, or any other faculty member you developed a rapport with through your classes. **Take advantage of the faculty you have available to you** – they were once graduate students, too!

Lab-Specific Questions

- What size lab am I most interested and comfortable working in?
- Which lab structure would I like to work in (post-doc : undergraduate : graduate student ratio, for example)?
- Do I thrive with a very involved, 'hands-on' mentor, or do I want more freedom to explore the science on my own?
- Do I want daily interactions with my mentor, or will weekly meetings suffice? Do I want a mentor with an open-door policy or do I prefer more email communication?
- Who would I like to be my direct supervisor and how many mentors do I want within the lab (PI, post doc, co-mentorship with multiple PIs)?
- How do I feel about the potential projects in the lab? Are these topics I am passionate about and will be interested in a few years down the line? Is this the type of research I am most interested in conducting (clinical, animal vs cell work, computational modeling, etc)?
- Would I like to directly mentor undergraduates, and would this be a possibility in my future laboratory?
- Is intensive collaboration or co-mentorship an option I am interested in?
- Do I want to write grant applications for external funding through organizations (AHA, NSF, NIH, etc)?

Other Graduate Experience Questions

- Are extracurricular activities either encouraged or discouraged in the lab, and is this important to me? Do I want to participate in outside activities such as the Graduate Biosciences Society (GBS) or other student citizenship organizations (GSAC, Student Council, Women in Math and Science, tutoring, Relay for Life, etc)?
- Is the opportunity to do formal teaching (as a co-lecturer or teaching assistant) important to me? Likewise, is formal mentoring of other students important to me?

Advice from BIMS students to our first year colleagues

Discussing the Lab Funding Situation – This is a tricky topic to navigate. While it may feel uncomfortable discussing a lab's funding with a PI, it is important to know the funding climate of your future lab. The best approach is to be straightforward and polite in asking about funding, specifically for you and your project. Most PIs will understand why you are asking and will readily provide information. In some cases, the funding may be uncertain, and it is up to you to decide if this is a risk you are willing to take. In addition, this is a conversation you are encouraged to have with your first year advisor.

Considering Lab Dynamics – The most important parts of your PhD training are your mentorship and the research toolbox you are building. Your primary concern should be finding a lab in which you have positive, productive mentorship and can maximize your research potential. However, your lab is your place of employment for the next few years; feeling comfortable and in an environment that is a good fit for you is also important. Many students suggest talking to current lab members (perhaps even outside of the lab, over coffee) about the lab's dynamics and the mentoring style of the PI. Keep in mind, though, there will always be people who are difficult to get along with and people frequently rotate in and out of a lab.

Advice from the literature

"How to succeed in science: a concise guide for young biomedical scientists. Part I: taking the plunge" by Jonathan Yewdell (Nat Rev Mol Cell Bio, 2008).
This review covers multiple topics, including choosing a laboratory, choosing a mentor, and defining what an "ideal project" means to you. Also includes a cartoon on various types of PIs.

"PhD Survival Guide" by Leonardo Almeida-Souza and Jonathan Baets (EMBO Reports, 2012).
This is a nice article on how to approach graduate school, with advice on how to perceive your training.

See a list of BIMS faculty at: http://bims.virginia.edu/our-faculty/

Appendix E: Student Services on Grounds

Maps of Grounds: www.virginia.edu/webmap
Other University Maps: www.virginia.edu/Map

Student Financial Services
1001 North Emmet Street
PO Box 400204
University of Virginia
Charlottesville, VA 22904-4204
Phone: 434-982-6000, 866-391-0063
Fax: 434-924-7636, 434-982-5203
Hours: M – F 8 AM – 5 PM (T 10 AM – 5 PM)
E-mail: faid@virginia.edu
Website: www.virginia.edu/financialaid/
Map: www.virginia.edu/webmap/DRoute29North.html; Building 1

Claude Moore Health Sciences Library
PO Box 800722
Charlottesville, VA 22908
Phone: 434-924-5444
Hours: www.hsl.virginia.edu/admin/general/hours.cfm
E-mail: hslref@virginia.edu
Website: www.hsl.virginia.edu
Map: www.virginia.edu/webmap/BHealthSciences.html; Building 6

ID Badge Services (Health System)
*Note: As students in the School of Medicine, we do not need an Academic ID
West Complex Room 1205
1300 Jefferson Park Avenue
Charlottesville, VA 22908
Phone: 434-924-2391
Fax: 434-924-1286
M – F 8:30 AM – 4:15 PM
E-mail: idservices@virginia.edu
Website: http://www.virginia.edu/idoffice/obtainid.html
Map: www.virginia.edu/webmap/BHealthSciences.html; Building 34

Information Technology Services
2015 Ivy Road
Charlottesville, VA 22904
Help Desk Phone: 434-924-4357, 866-469-4866
Help Desk E-mail: 4help@virginia.edu
Website: its.virginia.edu/
Locations: its.virginia.edu/about/map.php
Map: www.virginia.edu/webmap/FUHallAndAthletic.html; Building 5

Intramural-Recreational Sports

Phone:434-924-3791
Fax: 434-924-3858
Facilities Hours: www.virginia.edu/ims/facilities/semester_schedule.php
E-mail: imrecsports@virginia.edu
Website: www.virginia.edu/ims

Aquatic and Fitness Center

450 Whitehead Road
Charlottesville, VA 22903
Phone: 434-924-3793
Website: www.virginia.edu/ims/facilities/afc.php
Map: www.virginia.edu/webmap/HStadiumHereford.html; Building 4

Memorial Gymnasium

210 Emmet Street, South
Charlottesville, VA 22903
Phone: 434-924-6204
Website: www.virginia.edu/ims/facilities/mem.php
Map: www.virginia.edu/webmap/ACentralGrounds.html; Building 24

North Grounds Recreation Center

510 Massie Road
Charlottesville, VA 22901
Phone: 434-924-7380
Website: www.virginia.edu/ims/facilities/ngrc.php
Map: http://www.virginia.edu/webmap/ENorthGrounds.html; Building 20

Slaughter Recreation Center

505 Edgemont Road
Charlottesville, VA 22903
Phone: 434-982-5101
Website: www.virginia.edu/ims/facilities/src.php
Map: www.virginia.edu/webmap/HStadiumHereford.html; Building 17

Parking and Transportation

1101 Millmont Street
PO Box 400000
Charlottesville, VA 22904-4000
Phone: 434-924-7231
Fax: 434-924-3980
Hours: M – F 7:30 AM – 5 PM
E-mail: parking@virginia.edu, transportation@virginia.edu
Website: www.virginia.edu/parking
Map: www.virginia.edu/webmap/DRoute29North.html; Building 9
University Transit Service Website: www.virginia.edu/parking/uts/index.html

University Registrar

Carruthers Hall, South Entrance
1001 N Emmet Street
Charlottesville, VA 22903-4833
Mailing Address
PO Box 400203
Charlottesville, VA 22903-4203
Phone: 434-924-4122
Fax: 434-924-4156
Transcripts, Certifications, Diplomas, SIS Help Line: 434-924-4122
E-mail: ureg@virginia.edu
Website: www.virginia.edu/registrar/
Map: www.virginia.edu/webmap/DRoute29North.html; Building 1

Elson Student Health Center

As graduate students with Aetna health insurance, we have access to a multitude of basic health services for free or very little cost. Examples of these include: vaccines, gynecology, family planning, psychological counseling, short courses of antibiotics, minor infections, wart treatment, basic cardiovascular screening, etc.
400 Brandon Avenue
PO Box 800760
Charlottesville, VA 22908-0760
Phone: 434-924-5362
After hours emergency medical or mental health clinician: 434-972-7004
Fax: 434-982-3956
Hours: Fall & Spring Semesters: M – F 8 AM – 5 PM, Sat. 8:30 AM – 12 PM
Summer and January Sessions and Breaks: M – F 8 AM – 4:30 PM
E-mail: studenthealth@virginia.edu
Website: www.virginia.edu/studenthealth
Map: www.virginia.edu/webmap/BHealthSciences.html; Building 9, missing from map. Located immediately East of Building 15.

Counseling and Psychological Services (CAPS)

Elson Student Health Center
400 Brandon Avenue
PO Box 800760
Charlottesville, VA 22908-0760
Phone (Daytime M – F): 434-243-5150
Phone (After hours and weekend crisis assistance): 434-972-7004
Fax: 434-243-6693
Website: www.virginia.edu/studenthealth/caps.html

Services for Students with Disabilities

Learning Needs and Evaluation Center/Disability Services Office
Elson Student Health Center
400 Brandon Avenue
PO Box 800760
Charlottesville, VA 22908-0760
Phone: 434-243-5180
TTY: 434-243-5189
Fax: 434-243-5188
Website: www.virginia.edu/studenthealth/lnec.html
www.virginia.edu/vpsa/disabilities-svcs/contacts.html

Department of Dentistry

1222 Jefferson Park Avenue, 2nd floor
PO Box 800740
Charlottesville, VA 22908
Phone: 434-924-1774, 434-243-6378
Website: www.medicine.virginia.edu/clinical/departments/dentistry/home-page
Map: www.virginia.edu/webmap/BHealthSciences.html; Building 14

UVA-WorkMed

1910 Arlington Boulevard
Charlottesville, VA 22903
Phone: 434-243-0075
Fax: 434-243-0078
Hours: M – F 8 AM – 4:30 PM (closed 12 – 1 PM Fridays)
E-mail: jzs@virginia.edu (Jonathon Schuch, M.Eng, P.E., Director)
Website: www.healthsystem.virginia.edu/pub/occupational-health/

Appendix F: Forms

Rotation Evaluation
Rotation evaluations are completed by the rotation mentor at the conclusion of each rotation and stored in the student's permanent file. These evaluations are typically included in training grant nomination materials.

BIMS Degree and Mentor Selection
This form is completed at the conclusion of the final rotation during the Spring Semester of the 1st year.

BIMS Laboratory Rotation Evaluation

BIMS STUDENT _____

ROTATION MENTOR _____

DATE SUBMITTED _____

DATES OF ROTATION _____

EVALUATION

	Excellent	Good	Acceptable	Needs Improvement	Unable to Assess
Bench skills	☐	☐	☐	☐	☐
Ability to design well-controlled experiments	☐	☐	☐	☐	☐
Ability to interpret data	☐	☐	☐	☐	☐
Rotation talk and/or lab meeting presentation	☐	☐	☐	☐	☐
Detailed, accurate, & current lab notebook	☐	☐	☐	☐	☐
Communication Skills	☐	☐	☐	☐	☐
Ability to organize facts and ideas	☐	☐	☐	☐	☐
Motivation	☐	☐	☐	☐	☐
Reliability	☐	☐	☐	☐	☐
Ability to handle stress	☐	☐	☐	☐	☐
Ability to interact well with colleagues	☐	☐	☐	☐	☐
Ability to function independently	☐	☐	☐	☐	☐

	None	Some	Most	All
Attended and participated in lab meetings.	☐	☐	☐	☐
Attended appropriate seminars.	☐	☐	☐	☐
Read and discussed relevant research in current journals, etc.	☐	☐	☐	☐

Comments regarding participation:

Please answer the following questions (continued on p. 2).

1. Briefly describe the assigned rotation project and progress achieved.

2. Based on your observations, evaluate this student's ability to begin and progress through dissertation research to completion of the PhD.
    a. Describe strengths of this student's research and abilities.
    b. Describe weaknesses of this student's research and abilities.

3. Briefly specify skills/behaviors this student should focus on to improve potential.

4. Overall evaluation / additional comments.

GRADE

☐ SATISFACTORY
☐ UNSATISFACTORY

REVIEW

Date reviewed with student _____

SIGNATURE:

_____
Rotation Faculty Advisor

Please submit the completed, signed form to the appropriate BIMS administrator. This document will be placed in the student's permanent file. Lab rotation evaluations are used as supporting documentation for training grant nominations (unless requested otherwise).

Mentor and Department/Program Declaration Form (BIMS)

Name _____ Date _____

Computing ID (i.e. xxx1x)_____ SIS ID#_____

Mentor (primary):_____ _____
Name (print) Primary Department of Mentor

Department/Program from which you will receive your degree:

_____ BIOMOL-PHD	Biochemistry and Molecular Genetics
_____ BIOL-PHD	Biology
_____ BIOP-PHD	Biophysics
_____ BIOMEN-PHD	Biomedical Engineering
_____ CELL-PHD	Cell Biology
_____ EXPATH-PHD	Experimental Pathology
_____ MICRO-PHD	Microbiology, Immunology and Cancer Biology
_____ PHY-PHD	Molecular Physiology and Biological Physics
_____ NEURO-PHD	Neuroscience
_____ PHARM-PHD	Pharmacology
_____ Other	(support letter required)

_____ _____
Student (Print) Signature

_____ _____
Primary Mentor (see note #1 below) Signature

_____ _____
Secondary Mentor (if applicable) Signature

_____ _____
DGS Signature

_____ _____
Chair (Dept. of Mentor's Primary Appt.) (see note #2 below) Signature

NOTE 1: In signing this form, the ***mentor*** accepts responsibility for overseeing the student's academic and research progress, and for providing and/or negotiating funding for the student until he/she completes the Ph.D. degree or leaves the University due to insufficient academic progress, transfer, or voluntary departure from the program.

NOTE 2: In signing this form, the ***Chair*** of the department from which the mentor holds his/her primary appointment acknowledges that the department will be responsible for financial support of the student should funding from the mentor become unavailable.