

# Cancer Biology Ph.D. Program

*Student Handbook*  
2017-2018



## Preface

This handbook has been issued to provide comprehensive information for the students and faculty about the Moffitt Cancer Center's Doctor of Philosophy Program in Cancer Biology. In addition to program specific requirements, it also outlines University degree expectations for degree conferment. Students in joint programs may have additional requirements. Certain exceptions may be made in extenuating circumstances. This handbook is accurate as of its print date.

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*All correspondence will be  
forwarded to the appropriate  
personnel through this office.*

## **Cancer Biology Education Committee**

To ensure long-term stability and consistency, the Education Committee is comprised of core members representing Molecular Oncology, Immunology, Drug Discovery and Risk Assessment, Detection and Intervention. Core committee membership is for a minimum of 4 years; there is no maximum term limit. The Education Committee also includes all acting course directors for the current academic year.

The Education Committee for 2017-18 is:

Ken Wright  
Doug Cress  
Mark Alexandrow  
Srikumar Chellappan  
Alvaro Monteiro  
Sheng Wei

John Koomen (Course Director – BSC 6457)  
Brian Ruffell (Course Director – PCB 6930, Fall)  
Kiran Mahajan (Course Director – PCB 6930, Spring)  
Mark Alexandrow (Course Director – PCB 6205)  
Shari Pilon-Thomas (Course Director – PCB 6231)  
Andriy Marusyk (Course Director – PCB 6931, Fall)  
David Basanta (Course Director – PCB 6931, Spring)  
Alvaro Monteiro (Course Director – PCB 6526)  
Gary Reuther (Course Director – PCB 6910 & BSC 7911)

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## Introduction

The University of South Florida & The Moffitt Cancer Center's Doctor of Philosophy Program in Cancer Biology was founded in the year 2000 to contribute to the prevention and cure of cancer. The challenge to conquer this disease is not only to unravel the molecular and biological basis for tumor development, but also to utilize basic discoveries and to translate their findings into lifesaving cancer therapies. To meet this goal we have designed an interdisciplinary cancer biology curriculum, affiliated with the University of South Florida's Colleges of Medicine, Engineering, and Arts and Sciences that encompasses biochemistry, molecular and cell biology, immunology, signal transduction, drug discovery, chemistry, functional genomics, proteomics, cancer genetics, bioinformatics and cancer therapeutics. This interdisciplinary approach will prepare our students to face the challenge of translating cancer research discoveries into lifesaving clinical protocols. In order to facilitate the best care, it is imperative for researchers to be dedicated to seeing ideas through from the laboratory bench to the patient's bedside.

## Application Process

Applications must be completed on-line and can be accessed at the following

<https://secure.vzcollegeapp.com/usf/>

*The priority deadline for funding consideration is January 15<sup>th</sup> for both domestic and international applicants. The University deadline to apply for fall admission is February 15<sup>th</sup>; the Cancer Biology PhD Program only admits in the fall.*

Completed applications will include:

- The on-line USF Application to Graduate Studies or International Graduate Admissions.

**Items below should be uploaded to the on-line application to the Cancer Biology Ph.D. Program:**

- One copy of transcript from all relevant undergraduate/graduate institutions (can be unofficial at this time)
- Personal statement summarizing research experiences and goals
- A CV or resume
- Three recommendation letters from persons who can attest to the applicant's research and/or academic abilities (emails addresses for these individuals inputted into on-line application)
- Official GRE test results directly from ETS (applicants should include photocopies if available)

In addition to these documents, *international applications* must also include:

- TOEFL scores, provided from ETS (applicants may choose to include photocopies)

All supporting documents are to be uploaded to the on-line application.

## *Admission Requirements*

Eligibility requirements:

- A Bachelor's Degree from a regionally accredited college or university
- An extensive background in biology or chemistry. Preference will be given to those with advanced coursework.
- Minimum 3.0 Grade Point Average (out of 4.0)
- A Graduate Record Examination (GRE) score must be submitted for application to receive full consideration. The GRE Subject test is not required.

For international students:

- TOEFL score of 550 (paper based) or 213 (computer based) or 79 (Internet based)
- Transcript evaluation by an accredited service; list available on USF Office of Graduate Studies website – [www.grad.usf.edu](http://www.grad.usf.edu).

*Students who seek admission to the Cancer Biology Ph.D. Program are required to meet all of the entrance requirements set forth by the University of South Florida and the State University System of Florida.*

Admission is highly competitive.

The majority of successful applicants will exceed the aforementioned criteria.

## *Courses*

Students are required to successfully complete all Cancer Biology Program Core Courses. Students who have not had advanced course work in Biochemistry, Molecular Biology and Statistics may be required to correct these deficiencies by their Dissertation Committees. Dissertation Committees are also at liberty to require additional coursework in a specified discipline if it will serve to better prepare the student to meet the needs of the research environment. Students must receive a "B-" or higher in all relevant coursework credited toward their degree; overall GPA for graduate coursework must be a 3.0 or higher in accordance with the USF Graduate Catalog requirement and to retain appointment as a Graduate Assistant/Associate.

In special circumstances the Education Committee is authorized to waive course requirements. Requests to waive course requirements should be made in writing, providing a detailed account of the specifics of the request, along with copies of any pertinent documentation pertaining to the request.

### **Required Core Cancer Biology Courses**

PCB 6457	<b>Cancer Research Techniques</b>
PCB 6230	<b>Cancer Biology I - Basics of Molecular Oncology</b>
PCB 6231	<b>Cancer Biology II – Cancer Immunology</b>

PCB 6205	<b>Cancer Biology III – Cancer Genomics and Drug Discovery</b>
PCB 6526	<b>Cancer Biology IV – Cancer Genetics</b>
PCB 6910	<b>Laboratory Rotations</b>
BSC 7911	<b>Directed Research</b>
PCB 6931	<b>Advances in Cancer Biology</b>
PCB 6930	<b>Current Topics in Oncology</b>
PCB 6932	<b>Bioethics for Cancer Researchers</b>
BSC 6939.004	<b>Selected Topics in Cancer Biology – Grant Preparation (Qualifying Exam)</b>
BSC 6939.008	<b>Research Seminar – CBSSS &amp; student defenses required attendance</b>

## **Cancer Research Techniques**

This course will expose graduate students to modern molecular and cellular biology principles and techniques utilized in basic and translational cancer research as performed in eleven Moffitt sponsored core facilities. Each core rotation of 1-2 weeks will include instruction by core staff via lectures and laboratory demonstration and participation. Practical applications and considerations of core services will also be described.

### **Topics typically include:**

- Molecular Biology
- Biostatistics
- Tissue Procurement
- Translational Research
- Molecular Imaging
- Flow Cytometry
- Cell Therapies
- Microarray
- Microarray Data Analysis
- Mouse Models
- Histopathology
- Analytic Microscopy
- Laser Microdissection
- Animal Subjects: IACUC
- Human Subjects: IRB

## **Cancer Biology I – *The Basics of Molecular Oncology***

*Prerequisites: Undergraduate Biology and Chemistry*

This course will provide in-depth exposure to many current topics in molecular and cell biology as they relate to cancer. A balance will be sought between cell biology, molecular biology, and biochemistry. The primary objective of this course is to obtain a current understanding of normal and abnormal cellular processes. In order to achieve this, this course is taught by a variety of lecturers who are scheduled to speak on their personal area of expertise. Topics to be covered include signaling transduction, transcriptional regulation, cell cycle control, apoptosis, drug discovery, oncogenes and tumor suppressors.

Individual instructors will provide reading assignments.

### **Topics Typically include:**

- Molecular Basis of Cancer
- Cytoplasmic Signaling
- Transcriptional Regulation
- Cell Cycle Control
- Apoptosis
- Tumor Suppressors

**Text:** *The Biology of Cancer*, 2<sup>nd</sup> Edition, Weinberg

*Molecular Cell Biology*, 7<sup>th</sup> Edition, Lodish, Berk, Matsudaira, Kaiser, Krieger, Scott, Zipursky & Darnell

*Molecular Basis of Cancer*, 4<sup>th</sup> Edition, Mendelsohn, Howley, Israel & Liotta

## **Cancer Biology II – Immunology and Applied Biology**

*Prerequisite: Cancer Biology I*

This course is a continuation of Basic Cancer Biology. It is divided into two broad sections: Immunology and Applied Cancer Biology. The Immunology section will cover the basics of normal immune development and function, cancer in the immune system as well as basic and applied aspects of transplant immunology. The Applied Cancer Biology section will cover several topics on the treatment of cancer.

### **Topics Typically include:**

- Innate and Adaptive Immunity
- Genetic Basis for Antibody Diversity
- Diversification of Immune Receptors
- T Cell Activation
- T & B Cell Signal Mechanisms
- B Cell Activation
- Myeloid Cell Lineages and Immunity
- Cellular Mechanisms and Molecular Mechanisms of Antigen Presentation
- Natural Killer Cells
- Complement System
- Tolerance
- Tumor Immunity
- Transplantation Immunology
- Hematopoietic Stem Cell Biology
- Biology of Hematolymphoid Malignancies
- Principles of Chemotherapy
- Principles of Radiation Therapy
- Cytokine Gene-Based Therapies
- Targeting Signaling Pathways with Gene Therapy
- Translational Models of Cancer
- Early Detection and Prevention of Cancer
- Biology of Hematolymphoid Malignancies II
- Bone Marrow Transplantation

**Text:** *Janeway's Immunobiology* 8th Edition, Murphy  
*Fundamental Immunology* 7<sup>th</sup> Edition, Paul

## **Cancer Biology III – Genomics and Drug Discovery**

*Prerequisite: Cancer Biology I*

This course is taught jointly by multiple faculty members. Topics to be covered include transcriptional and chromatin control, microRNA regulation, DNA replication and damage, mitotic regulation, cancer gene discovery, mode of action of chemotherapeutic drugs, and rational drug design. Individual lecturers will provide recent primary research articles, and students will be expected to participate in the analysis of these papers as part of their grade. Students are expected to supplement the lecture information and primary research paper reading, and gain more in-depth understanding of each topic, by studying appropriate chapters in the primary assigned book.

### **Topics Typically include:**

- Drug Discovery
- Chemotherapeutic Drug Actions
- Transcription Control
- Gene Discovery
- DNA Replication/Damage

**Text:** *The Biology of Cancer*, 2<sup>nd</sup> Edition, Weinberg  
*Molecular Cell Biology*, 7<sup>th</sup> Edition, Lodish, Berk, Matsudaira, Kaiser, Krieger, Scott, Zipursky & Darnell  
*Molecular Basis of Cancer*, 4<sup>th</sup> Edition, Mendelsohn, Howley, Israel & Liotta

## **Cancer Biology IV – Cancer Genetics**

This course explores the field of cancer genetics through a combination of traditional lectures and analyses of case studies. The lectures cover various concepts and methodologies. Concepts to be covered include penetrance, oncogenes, two-hit hypothesis, tumor suppressors, loss of heterozygosity, epidemiological studies, LOD

scores, and risk assessment. Methodologies to be covered include: RFLP -> microsatellite markers -> SNPs, positional cloning, Representational Differential Analysis (RDA), Comparative Genomic Hybridization (CGH), spectral karyotyping, haplotype analysis, and somatic cell genetics to identify complementation groups. Case studies will revisit the concepts and methods above in light of actual data. **Course prerequisite:** Cancer Bio I and II; approval by Program Director and Course Director.

**Text:** *Introduction to Genetic Analysis*, 10<sup>th</sup> Edition, Griffiths, Wessler, Lewontin, Gelbart, Suzuki, Miller  
*The Biology of Cancer*, 2<sup>nd</sup> Edition, Weinberg

## **Laboratory Rotations**

First Year Cancer Biology Ph.D. students will be required to complete the **Laboratory Rotations** Course. This course is designed to help the students choose a compatible Major Professor and allow students to develop necessary technical skills. It is graded on a satisfactory (pass) or unsatisfactory (fail) basis. The rotation Professor will also complete the Rotation Evaluation form. **Rotation Evaluation forms will be used by the Education Committee as part of the determination if the student will proceed to the Qualifying Examination and be reappointed to the second year of the Program.**

The *Laboratory Rotations Course Director* will contact all program faculty members and arrange for them to give brief presentations of their research to incoming students on a day known as **Meet the Mentors**. On this day, potential “Major Professors” will be allotted 15 minutes each to present their research to the incoming Cancer Biology students.

After these presentations, students will consult with individual faculty members whose interests are compatible to their own and arrange for rotations. A **Rotation Form** that has been signed by the sponsoring faculty mentor must be submitted to the course director within two weeks.

Students are encouraged to complete 3 rotations; a minimum of 2 rotations is required. Each one will be for 10 weeks so the student has adequate time in each laboratory to make an informed decision about who his or her Major Professor will be. If after completing the spring semester, the student still has not decided whom to choose as his or her **Major Professor**, he or she may enroll in the Laboratory Rotations Course for the summer semester upon approval of the Education Committee.

Students enrolled in this course will be evaluated by the professor whose laboratory in which they are completing their rotations and by the Laboratory Rotations Course Director.

## **Directed Research**

This course consists of practical laboratory work, guided by the student’s major professor. It is taken prior to passing the qualifying exam. Students enrolled in *Directed Research* receive either a *satisfactory* or an *unsatisfactory* grade.

## **Advances in Cancer Biology**

An important component of graduate training is gaining experience in the critical evaluation of research reports and developing and executing professional research presentations. This course will provide Cancer Biology graduate students with the opportunity to read and orally present current cancer research literature. The student will learn to critically evaluate research for coherence with respect to the authors' rationale and quality of the methodology employed. Students are enrolled in this course from their second year in the program until the beginning of their sixth year. First year students are not formally registered but are required to attend unless there is a course schedule conflict. Senior students are required to attend until the semester of their defense unless a waiver is requested and approved by the Program Director.

## **Current Topics in Oncology**

Progress in cancer research is proceeding at a rapid rate, and thus, textbooks and didactic lectures are inherently behind the times. This course will bring renowned speakers from outside the USF community in order to broaden the students' perspectives on cancer research beyond the walls of the Moffitt Research Center. In preparation for each seminar, students will be assigned two papers to read and critically examine. These articles will serve to introduce the students to the speaker's area of expertise and generate questions for discussion. Following the seminar, participants will meet with the speaker and the course director to discuss cancer research innovations relevant to the speaker's specialization. Enrollment in this course is limited to second- and third-year Cancer Biology students only.

## **Bioethics for Cancer Researchers**

The objective of this course is to introduce students to the ethical issues facing cancer biologists and to prepare the students better handle the issues when confronted by them in their careers. The course will consist of seven 75 minute interactive open discussion sessions focused on the key ethical issues. Each session will be facilitated by two faculty members who will introduce the topic and outline the key considerations for discussion. Case studies and video vignettes will be presented and analyzed by the students in class. This course requires active student participation and open discussion between during each session. **2<sup>nd</sup> year students are required to attend.**

## **Selected Topics In Cancer Biology**

These courses provide an in-depth study of a single aspect of cancer biology.

**Grant Writing:** The objective of this course is to introduce students to the process of preparing an effective research grant proposal. The students will learn the components of a grant application and build writing skills. This course requires active student participation and open discussion between during each session.

**Research Seminar:** An important component of graduate training is developing and executing professional research presentations. Experience both attending and presenting multiple presentations and seminars is invaluable in this process. This course will provide

faculty feedback on student presentation skills, PowerPoint slides and usage of AV equipment as part of the Cancer Biology Student Seminar Series (CBSSS). No faculty feedback will be provided following dissertation defenses other than that provided by the dissertation examination committee. Students are enrolled in this course from their second year in the program until the semester of their defense. While not formally registered, first year students must also attend if there are no other class conflicts.

### **Approved Selective Courses**

Students who have not had advanced course work in Biochemistry, Molecular Biology and Statistics may be required to correct these deficiencies by their Dissertation Committees. Dissertation Committees are also at liberty to require additional coursework in a specified discipline if it will serve to better prepare the student to meet the needs of the research environment.

## *Key Program Requirements*

### **Selection of Major Professor**

Selection of a student's Major Professor is the most important aspect of graduate training. Upon selection, the major professor becomes the key faculty member responsible for the student's training. This individual not only serves as a scientific mentor to the student, but he or she also functions as the student's source of financial support beginning in the second year of the program. Therefore one must consider the availability of funding when choosing a Major Professor.

Typically, students should select a Major Professor before or around June 1<sup>st</sup> of their first year in the program. If a student needs more information prior to making a selection, he or she is encouraged to enroll in a third semester of Laboratory Rotations, thereby delaying the selection deadline until September 1<sup>st</sup>.

### **Selection of Dissertation Committee**

Following the selection of the Major Professor, the Dissertation Committee must be selected. Under the guidance of the Major Professor, the students will choose a minimum of three additional Faculty members to serve on the Dissertation Committee along with the Major Professor. At least one member of this committee must also be a current or former member of the Cancer Biology Education Committee. A complete list of Education Committee Members is available in the Program Office. All committee members must be members of the **USF faculty**. Once the committee members have been selected, a USF Graduate Student Supervisory Committee form must be completed, signed and returned to the Cancer Biology Program Office, for forwarding to the Dean of Arts and Sciences.

The responsibilities of the Dissertation Committee are to:

- Review the student's transcript and oblige the student to complete additional coursework if relevant to successful completion of the program.
- Advise and monitor the student's academic progress toward the Ph.D. degree.
- Advise the student on dissertation research.
- Evaluate the student's final dissertation and oral defense.

Once formed, the dissertation committee is the primary authority that guides the student. If serious problems arise with the Dissertation Committee, the student must document his or her concerns in writing and submit them to the Program Director. The request will then be presented at the next Cancer Biology Education Committee meeting. The committee will discuss the situation and decide whether or not the situation warrants intervention. The Committee reserves the right to interview both the student and the Faculty members in question prior to making a final decision on the matter. In the event that a Dissertation Committee needs to be changed for any reason, the student must submit a new Supervisory Committee Form to the Cancer Biology Office.

## Qualifying Examinations

### **Approval to proceed to the Qualifying Examination stage:**

In May to early June of a student's first year, the Education Committee (including ad hoc members if requested by the committee) will review each student's lab rotation evaluations and grades. Students must achieve a B- grade or better in all courses, an overall score of 6 out of 10 in their lab rotation evaluations, **and** receive a majority pass vote by the committee. Following a positive review, student is approved to begin work on their qualifying exam. If the student receives a negative evaluation of the first year accomplishments he/she will be informed of the Program's intention to not reappoint them as a GA for the following year. A Qualifying Examination Committee is then formed for each student from volunteer faculty and consists of five members, excluding the student's major professor.

### **Written Proposal:**

The student will develop an abstract with specific aims which the Qualifying Examination Committee will approve to be developed into a 6-8 page R21 style grant proposal. The abstract must be significantly unrelated to the probable dissertation work of the student. The Committee is responsible for determining if the abstract is sufficiently distinct from the dissertation work.

### **Oral Defense format:**

The student is to give a presentation of their research proposal lasting no longer than 45 minutes. Immediately following the presentation, the Qualifying Examination Committee will ask questions for the student to defend or clarify any aspect of the proposal. This may include aspects which were not specifically written in the proposal including methodology, significance and background underlying the proposal. In addition the committee may ask general scientific questions. The oral examination is meant to be a rigorous testing of the student's critical thinking skills as well as general scientific knowledge.

### **Qualifying Examinations Timeline**

Qualifying examinations will initiate at the end of the student's first Spring semester and conclude in the fall semester of the student's second year. The timeline for completion is (dates are subject to change):

- Early May of student's first year – The Qualifying Examination (QE) Committee will inform the students if they have received approval to begin their qualifying exam. Following a positive review, student decides on title supported by a few sentences (no more than ½ page. This is due to the Committee by May 24.
- May 30 – QE Committee notifies students of approval or need for revision of topic. Each student's PI must confirm the topic is unrelated to the student's research project. Upon receiving approval, students develop an abstract with specific aims (1 page).
- June 20 – Abstract with aims due to QE Committee.
  - See format guidelines sheet
  - The proposal must be original work of the student.
- June 30 – QE committee returns comments.
- July 11 – Revised version of Specific Aims page due.
- July 18 – QE committee returns additional comments.
- September 1 – Proposal due to QE committee
  - 8 pages plus Specific Aims page and Reference section.
  - Written comments from QE committee provided to students 3 weeks prior to oral defense
- Oral defense will be scheduled between October 10 and October 21.
- Should a student fail on the first attempt he/she will be given 30 days to revise and defend again
- Second failure will result in student's removal from the Program at the end of the current fall semester

### **Grading of the Qualifying Examination:**

Qualifying Examination Committee = will consist of 5 members of the Cancer Biology PhD Program faculty. The committee will be selected and impaneled by the Program Director in June of each year and dissolved at the conclusion of the examination period. All members of the committee will be required to be present during the Oral Defense. Major Professors of students taking the exam may be part of the committee but will be excluded during their own student's oral examination.

The written and oral sections will be graded independently by members of the committee according to the criteria listed on the Qualifying Exam Evaluation Form. Both sections must be passed. The student must achieve at least 70% on a 100-point scale to receive a passing grade. In addition to this, if more than one member of the committee records a failing score for the student, the student automatically receives a failing grade. The committee may elect to require the student to amend the proposal and/or repeat the oral

defense to correct any deficiencies. It will be the responsibility of the committee to calculate the overall grade and determine whether the student passes or fails. Students failing this portion of the qualifying exam will be dismissed from the program at the end of the current semester.

Once the qualifying examination has been passed, students will

- submit an **Admission to Candidacy form** to the Dean of Arts and Sciences. Following *admission to candidacy* students must be registered for a minimum of two hours of Dissertation Research (BSC 7980 Dissertation Research) each semester.
- hold a formal committee meeting during the Spring semester to present and review the student's dissertation research plan. From this point forward, the major professor will serve as the Chairperson of the Dissertation Committee.

### **Cancer Biology Qualifying Exam Proposal – Guidelines**

- 1. Format** NIH (SF424) format:  
(Arial, 11 point, 0.5" margins on all sides.)
- 2. Specific Aims** (1 page)  
State concisely the goals of the proposed research and summarize the expected outcome(s), including the impact that the results of the proposed research will exert on the research field(s) involved.  
List succinctly the specific objectives of the research proposed, e.g., to test a stated hypothesis, create a novel design, solve a specific problem, challenge an existing paradigm or clinical practice, address a critical barrier to progress in the field, or develop new technology.
- 3. Research Strategy** (6-8 pages)  
Organize the Research Strategy in the specified order and using the instructions provided below. Start each section with the appropriate section heading – Significance, Innovation, Approach. Cite published experimental details in the Research Strategy section and provide the full reference in the Literature Cited section.
  - (a) Significance**
    - Explain the importance of the problem or critical barrier to progress in the field that the proposed project addresses.
    - Explain how the proposed project will improve scientific knowledge, technical capability, and/or clinical practice in one or more broad fields.
    - Describe how the concepts, methods, technologies, treatments, services, or preventative interventions that drive this field will be changed if the proposed aims are achieved.
  - (b) Innovation**
    - Explain how the application challenges and seeks to shift current research or clinical practice paradigms.
    - Describe any novel theoretical concepts, approaches or methodologies, instrumentation or interventions to be developed or used, and any advantage over existing methodologies, instrumentation, or interventions.
    - Explain any refinements, improvements, or new applications of theoretical concepts, approaches or methodologies, instrumentation, or interventions.
  - (c) Approach**
    - Describe the overall strategy, methodology, and analyses to be used to accomplish the specific aims of the project. Unless addressed separately in Item 15 (Resource Sharing Plan), include how the data will be collected, analyzed, and interpreted as well as any resource sharing plans as appropriate.

- Discuss potential problems, alternative strategies, and benchmarks for success anticipated to achieve the aims.
- If the project is in the early stages of development, describe any strategy to establish feasibility, and address the management of any high risk aspects of the proposed work.
- Point out any procedures, situations, or materials that may be hazardous to personnel and precautions to be exercised.

If an applicant has multiple Specific Aims, then the applicant may address Significance, Innovation and Approach for each Specific Aim individually, or may address Significance, Innovation and Approach for all of the Specific Aims collectively.

**Preliminary Data:** You may use data from the literature or other sources as long as it is fully cited. Preliminary data should be used to support your hypothesis, rationale and/or feasibility. This should be included within the three sections listed above: Significance, Innovation, and Approach. (Additional preliminary data may be presented during your oral defense.)

<b>References</b>	Present numbered in order of citation.
<b>Cited</b>	Use complete citation, for example:
(no page limit)	1. Hanahan, D., and R. A. Weinberg. 2011. Hallmarks of cancer: the next generation. Cell 144:646-674.

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## Annual Progress Reports

All Cancer Biology Students must submit an Annual Progress Report to the Office of Cancer Biology (MRC 4072) by October 31<sup>st</sup> beginning the second year that they are enrolled in the program. The report will be presented to the Education Committee.

The following information is required as part of **the students'** annual progress portfolio. Items should be submitted in the following order:

1. Research Progress (1/2 page)
2. Publications
3. Abstracts of Talks Given
4. Honors and Awards
5. Printout of all classes taken with grades assigned
6. List of courses taken during the year

**Second year students** should also include lab rotations completed and Committee members selected. A template is available on the Cancer Biology website in the Current Student sub section in "Forms".

**The Major Professor** is required to complete an evaluation provide by the Cancer Biology office on the student's performance and progress. Are they on track for graduation? What are

their strengths? What do they need to improve on in order to succeed? After completing the report the Major Professor and student should discuss it so that the student understands their current status. This needs to be an *honest* evaluation. If the student has deficiencies it is important that it be addressed promptly so that all parties understand the circumstances and have an opportunity to improve. This report must be co-signed by the student and submitted to the Cancer Biology Program Coordinator (MRC 4 East).

Students and Major Professors should retain a copy of the reports.

## **Annual Committee Meetings**

Candidates are required to organize annual meetings of their Dissertation Committees. The purpose of these meetings is for the committee to evaluate the student's progress toward the degree and to provide input and direction. Evaluation forms, available on the Program's website under the "Students-Information and forms for current students" section as "Dissertation Committee Meeting Report Form", should be completed at each meeting, signed by the members of the committee, discussed with the student and then submitted to the Cancer Biology Education office.

## **Stipends**

*Full tuition and fee waivers are provided. The Cancer Biology Program covers student health insurance premiums. In addition, each first year student receives a stipend of \$25,000 per year (2017-2018). A \$1,000 increase is given following successful completion of the qualifying examination. Stipend levels are reviewed every three years and market adjustments are made if necessary. As noted in the Student-Major Professor Selection and Commitment form, stipend support beyond five years from the time of admission (not counting leave of absences) is not guaranteed.*

Incoming students are appointed as Graduate Research Assistants and supported from Program funds for their first year only. Beginning the second year, the major professor will henceforth be responsible for providing stipend for the student. Tuition and health insurance will continue to be paid by Cancer Biology Programmatic Funding. **All students are encouraged to apply for funding from outside sources.** The chairman of the Cancer Biology Education committee will maintain a list of relevant granting agencies and will assist students in obtaining application materials.

**Outside employment for students who are receiving stipends is strictly prohibited.**

## **Teaching Opportunities**

Students admitted to the Cancer Biology Program are appointed as Graduate Research Assistants/Associates. Working as a TA for a stipend is not allowed. Opportunities for teaching experience on a voluntary basis do exist primarily as a TA in the Biology Department.

Requests for volunteers are sent out by the Program Office via email to the students.

## **Fellowships**

### **Purpose:**

The Cancer Biology Program encourages all students to apply for funding. This includes pre-doctoral fellowships and other research support. Pre-doctoral fellowship awards are very prestigious both for the individual student and for the Program. Students should consider applying as soon as possible after selecting a mentor since many pre-doctoral awards are not available after the student completes their second year. Other types of research awards are also valuable in building the student's career and supporting their research efforts.

In an effort to (a) encourage and reward successful applications, (b) maintain consistency across the program and (c) avoid confusion between the expectations of the mentor and student, the following policy has been established.

### **Policy Statement (revised as of November 22, 2016):**

1. A student who acquires funding for his/her stipend will receive the greater of:

A 10% bonus over their current stipend for the duration of the award. The bonus is not to exceed the amount of the award. The Major Professor is responsible for providing the bonus to the student.

OR

The entire amount of the Fellowship, if that amount is greater than the current stipend and bonus combined.

Should the fellowship stipend be less than the corresponding stipend level within the Cancer Biology Program for the student, the Major Professor will be required to fund the difference so that the student will remain on par with his/her peers. This funding would be reviewed and adjusted as necessary on an annual basis.

2. A student who receives individual research funding that does not include stipend will receive a bonus based on the following:

A salary bonus equal to 10% of the award amount but not to exceed 10% of the student's current stipend.

The Major Professor is responsible for providing the bonus to the student.

# Parental Leave

## Purpose:

To provide guidelines for addressing maternity leave requested by Graduate Students in the Cancer Biology Ph.D. Program.

## Definitions:

**Student** – For the purpose of this policy, “student” will refer to a USF student currently enrolled in the Cancer Biology Ph.D. Program.

## Policy Statements:

### Eligibility:

- A. Students must have completed at least 2 consecutive semesters as a Cancer Biology Graduate Research Assistant/Associate or as a USF Presidential Fellow.
- B. Students must be in good academic standing.

The student must notify the Cancer Biology Program Director and their major professor in writing as soon as possible but no later than 4 months prior to expected delivery of child.

If the student is the birth mother, then she will be eligible for 6 weeks paid leave. If the student is the birth father, he will be eligible for 3 weeks paid leave. Adoptive parents will be eligible for 3 weeks paid leave.

During leave, the student will remain registered as a full time student. The student (in consultation with the Cancer Biology Program Office) must assure that she/he will not be registered for courses in which their absence will result in a failing or incomplete grade. Students may register for Directed Research or Dissertation Research.

If necessary, Ph.D. qualifying examinations will be postponed until the semester following the student’s return from parental leave.

Once the birth mother returns to lab related work, she may request that responsibilities be scaled back to a minimum of 20 hours per week while receiving full pay for up to 4 additional weeks. The mentor and student will determine a mutually satisfactory part-time schedule prior to the student’s return to the lab.

The Cancer Biology Ph.D. Program will provide the stipend during the initial parental leave and one half of the stipend during the period the student elects to scale back to 20 hours per week. The Major Professor will be responsible for the other half of the stipend during the scale back period of 20 hours per week.

This funding mechanism is available only twice for each student.

## Travel Awards

***This program will be renewed annually, contingent on the availability of departmental funds. To be eligible you must be a student in the Cancer Biology Ph.D. program.***

For a meeting to qualify for this award, it must be either:

- 1) A scientific conference in which you are presenting an abstract as first author
- OR
- 2) A respected scientific course (i.e. Cold Spring Harbor). *Training courses run by companies to instruct you in the use of their equipment do not qualify.*

The Cancer Biology Ph.D. program will grant one travel award per student per **calendar** year. There will be no restriction on the destination but the award will be capped at \$1,000. The student's faculty mentor will be required to meet any expense beyond the \$1,000 limit.

Students will make every effort to minimize costs and all travel arrangements **must** be made through the Program Coordinator. The standard USF travel *per diem* will apply.

Any student who accepts the award is required to submit a written meeting report within three weeks of his or her return. This report should summarize what the student has learned at the meeting and how this will benefit his or her research and/or career. The student must also submit a copy of the meeting schedule and all documentation requested for reimbursement purposes at this time.

How to Apply:

Complete the Travel Award Request form available on the Cancer Biology website: <http://cancerbiology.usf.edu> , go to the "Resources" section, then select the Travel Award form from the list in the "Current Students" section. Submit with necessary travel dates/times to Cathy Gaffney, MRC 4-E.

If requesting payment of registration fees, please have all necessary documents to Cathy at least 4 weeks prior to any published deadlines.

# *Requirements for Degree Conferment*

## **Publication Requirement**

Students must have *at least* one paper (first author) accepted for publication in a peer-reviewed journal. Generally, it is expected that students surpass this requirement by publishing numerous papers. If questions are raised regarding whether or not a paper qualifies to meet this publication requirement, the final decision will be determined by a majority vote of the dissertation committee. *This paper must reflect the student's own, original work.*

## **Research-In-Progress Seminars**

Each Ph.D. candidate is required to present a minimum of two formal seminars to the Moffitt Cancer Center Faculty or at national meetings. This may be incorporated into the formal Cancer Biology Student Seminar Series (CBSSS) or arranged by the Program Administrator, specifically to fulfill this requirement. It is the student's responsibility to contact the Program Coordinator in their third and fourth years to insure that they are scheduled. The final defense seminar does **not** count toward this requirement.

## **Credit Requirements:**

Required Core Courses	16 hrs Minimum
Lab Rotations	2 hrs Minimum
Other Course Requirements (Current Topics, Advances, Bioethics)	18 hrs Minimum
Dissertation Research (can include up to 50% as Directed Research hrs)	24 hrs Minimum
<hr/>	
Other Requirements*	36 hrs Minimum

Total Credits **96 hrs**

\*Remaining hours will consist of Dissertation hours (BSC 7980), Selected Topics in Cancer Biology (BSC 6939), and/or Program approved electives.

## Additional University Requirements

- 1) *Three academic years of work beyond a bachelor's degree*
- 2) *At least one academic year of residence on a USF campus*
- 3) *A minimum of 9 credit hours (Fall and Spring) or 6 credit hours Summer is required to maintain full-time status (it may be necessary to register for Directed Research credits prior to being admitted to candidacy to maintain a full course load).*

## **Dissertation and Oral Examination**

Once a candidate has met all program requirements and the Major Professor has reviewed and approved the student's dissertation draft, the candidate should submit his or her dissertation draft to each member of the previously appointed Dissertation Committee. Once the committee members have had at least two weeks to review the dissertation draft, the committee should meet to decide whether the dissertation draft is approved or disapproved. The Dissertation Committee may approve the draft as written, or approve with the stipulation that the student complete minor modifications to the existing draft. If *extensive* modifications are required, the student must modify the draft and begin the review process again by resubmitting the draft to the Major Professor and then to the members of the Dissertation Committee.

When the Dissertation Committee has approved the dissertation draft, they will complete a form requesting the announcement and scheduling of the Dissertation Oral Defense examination. This form must be submitted to the College of Arts and Sciences for approval. The Dean must receive the form at least three weeks prior to the dissertation defense. In addition, the oral defense of the dissertation must be held at least three weeks prior to the end of the semester for the student's degree to be confirmed at the end of that semester.

The Chairperson of the Dissertation Defense Committee will be from outside of the USF community and should be an expert in the student's field of interest. The student and Major Professor will confer and select a dissertation defense chair. This Chairperson must be approved by the Cancer Biology Program Director, the Associate Dean of CAS, Dean of the Office of Graduate Studies and the Associate Dean of the Office of Graduate Studies.

The **Dean of the Office of Graduate Studies** must approve all Dissertations prior to conferment of the Ph.D. degree. Detailed information may be found at the following URL:

<http://www.grad.usf.edu/ETD-res-main.php>

The Office of Graduate Studies will not accept a dissertation after the first day of a semester unless the candidate is enrolled in the appropriate dissertation course for at least 2 credit hours. All dissertations are to be submitted to the University electronically.

## **Dissertation Policies**

### **Format of the Dissertation Thesis**

#### **Purpose:**

To provide uniformity to the dissertation theses produced by the graduates of the Cancer Biology Ph.D. Program. Bound copies of dissertations written by graduates are available in the Program Office for review.

#### **Policy Statements:**

- A. The format of the dissertation will follow the traditional style; use of the ETD Alternate Format is not allowed. Example of the traditional format as required by the USF Office of Graduate Studies can be found at this link:

- B. The outside chair for the dissertation defense will be included in the “Acknowledgement” section of the thesis. The outside chair’s full name followed by his degree designation (Ph.D., M.D.) and the institute where he is currently on faculty should all be noted as well as any other relevant information.
- C. Full citations containing all authors and full titles will be used in the “Reference” section of the thesis, **not** the abbreviated form containing the first author’s name followed by “et al”.
- D. The binding and lettering of the print copy of the thesis is required to match as closely as possible those dissertations of earlier graduates (copies located in the Cancer Biology Program office).
- E. The Program will cover for the cost of printing and binding three (four if there is a Co-Major Professor) copies of the dissertation thesis. One copy will be kept in the Cancer Biology Program Office, one copy will be presented to the Major Professor and one copy is for the student. The student will provide the Program Coordinator with a copy of the final dissertation for printing and binding.

## **Time Limits Policy**

**Policy:** Time Limitation on Funding Support

**Purpose:** To clarify existing policy and establish criteria for continued funding beyond 5 years of study.

### **Policy Statements:**

To qualify for their dissertation defense and ultimately graduation, Cancer Biology PhD students are required to show proficiency, distinctive achievement, demonstrate the ability to do original independent cancer research and document this achievement with at least one first author peer reviewed scientific publication.

These qualifications and a successful dissertation defense should be reached within 4-6 years of admittance to the Program.

1. Stipend support and tuition/fee payments beyond 5 years from time of admission (not counting leave of absences) will be subject to annual review.
2. If a student expects to require continued funding beyond 5 years the student must submit an application of continued support for approval by the Cancer Biology Education Committee. The application procedure is:
  - a. Submit a written application to the Education Committee no later than July 15<sup>th</sup> preceding the beginning of the Fall semester of the 6<sup>th</sup> year.
  - b. The application must include clear statements of progress toward graduation, requirements completed and a clear plan with a time line for achieving the graduation requirements.

- c. The application must be signed by the student and include signatures of the mentor and all committee members indicating receipt of a copy of the application. (Note: Mentor and committee member signatures do not indicate support for the application, only acknowledgement that they are aware the application is being made.)
- d. The mentor must submit a separate letter to the Education Committee indicating his/her support or lack of support for the application. If supporting the application, the letter should also state a willingness to continue to fund the student's stipend for an additional year. If co-mentors are involved, both should submit letters.
- e. The Education Committee may also request letters from the other dissertation committee members.
- f. If the application is approved it will be valid for one academic year. Additional years of extended funding will require a new application for each year.
- g. If the application is denied the student may appeal the finding or request one year of continued enrollment in the program without financial support (in this case the student will become responsible for cost of tuition and will not receive a stipend).

3. *USF Graduate School Policy* - Students have 7 academic years after admission into USF to successfully defend their dissertation. If the student needs additional time, the student must submit a request for an extension to the Graduate School. Procedures are available on the USF Graduate Studies web site.

# Appendices