

The University of Texas Health Science Center at San Antonio
Integrated Multidisciplinary Graduate Program (IMGP)

Cancer Biology (CB) Track Guidelines

- I. Description
- II. Faculty
- III. Cancer Biology Leadership Committee (CBLC)
- IV. Acceptance into the CB Track
- V. Course Requirements
 - a. Required Courses
 - b. Electives
- VI. Grading Policy
- VII. Requirements for Admission to Candidacy
 - a. Selection of Dissertation Advisor
 - b. Qualifying Exam
 - c. Dissertation Committee
 - d. Proposal
 - e. Admission to Candidacy
- VIII. Student Evaluations
- IX. Awarding of Ph.D.
 - a. Dissertation Defense
 - b. Dissertation
 - c. Awarding of Degree
- X. Exceptions to Guidelines
- XI. Attachments
 - Attachment A: Credentialing Form
 - Attachment B: Cancer Biology Faculty
 - Attachment C: Cancer Biology Leadership Committee
 - Attachment D: Mentor and Track Selection Form
 - Attachment E: Recommended Elective Courses
 - Attachment F: Approval Form For Dissertation Proposal
 - Attachment G: Student Evaluation Forms
 - Attachment H: Format for the Dissertation Proposal
 - Attachment I: Scheduling for Final Oral Examination and Binding of Dissertations
 - Attachment J: GSBS forms

I. Description

Cancer has recently surpassed heart disease as the number one killer in the U.S. population in the population under 85. The evolving technologies in molecular biology, imaging, and rational drug design and screening have led to rapid expansion of new strategies for prevention, detection and treatment of human malignancies. The goal of the Cancer Biology Track is to educate the next generation of cancer researchers to meet the growing demands for scientists trained in multiple facets of cancer biology. Faculty in this track possess a broad range of expertise in cancer research including genomics/proteomics, cell signaling and receptor biology, tumor immunology, DNA repair, structural biology, viral oncogenesis, drug discovery, chemoprevention, experimental therapeutics, and clinical trials. The curriculum stresses both basic and translational research to provide the broad background in oncology needed for today's research. The Cancer Biology Track of the Integrated Multidisciplinary Graduate Program (IMGP) is part of the Cellular & Structural Biology Graduate Program and it is governed by its general guidelines.

II. Faculty

Faculty members in the CB track have Ph.D., M.D., D.D.S. or equivalent degrees and are appointed as Assistant Professor, Associate Professor, or Professor in the Graduate School, Medical School, and Dental School. The forms for requesting credentialing is listed in Attachment A. A list of current CB track faculty members is appended in Attachment B. Faculty rosters in the CB Track will be reviewed every three years by the Track Credentialing Committee. The majority of the faculty have active research programs in their laboratories, which are funded by extramural and intramural grants.

III. Cancer Biology Leadership Committee (CBLC)

The Cancer Biology Leadership Committee (CBLC) consists of the Co-Leaders, the Curriculum Committee Chair, the Recruitment Committee Chair, the Qualifying Exam Chair, the Credentialing Committee Chair, the IMGP Admissions Committee Representatives and the Student Advisors. The functions of these individuals and committees are listed in Attachment C.

IV. Acceptance into the CB Track

Students for the Cancer Biology Track come from the IMGP. The IMGP recruits and admits students into the program using the general qualifications for the graduate program. Until the student chooses a track, he/she is under the guidelines of the IMGP. During this time, they will fulfill the following requirements.

IMGP Core Course: Fundamentals of Biomedical Sciences INTD 5000 (8 credits, Fall 1st year).

This is a core course covering the fundamentals of biochemistry, molecular biology, cell biology, microbiology/immunology, and organismal and systems biology. The course is designed for first-year graduate students matriculating into the integrated multidisciplinary graduate program.

IMGP Laboratory Rotation INTD 5008 (2 credits, Fall 1st year; 2 credits, Spring 1st year)

During the first year of graduate study, each predoctoral student will participate in research in the laboratories of potential mentors. Each rotation will last a minimum of six weeks (no longer than 12 weeks) and will typically be conducted in the fall and spring semesters of the first year. Ideally, the student will have selected a laboratory in which to complete his/her

dissertation research by the spring semester of the first year. A student can combine two consecutive 6-week rotations to generate one 12-week rotation provided this is mutually agreeable between the student and the faculty member. Thus, a student could complete: four 6-week rotations, or two 6-week rotations plus one 12-week rotation, or two 12-week rotations. However, a student cannot complete more than two 6-week rotations or one 12-week rotation in the same laboratory.

Rotations are intended to: a) acquaint the student with specific research topics in the graduate program, b) introduce students to technique(s) which may prove useful in their dissertation research, c) allow an opportunity for the student to assess whether he/she is compatible with the mentor and his/her laboratory personnel, and d) allow the faculty member to decide if the student is compatible for his/her lab. Choice of the laboratories for rotation should be made based upon the student's specific research interests and in consultation with IMGPS Student Advisors. The policies for the evaluation and grading of laboratory rotations will be established by the Rotation Course director. An electronic copy of the grade and evaluation forms will be forwarded to the track student advisor once the student chooses a track.

In the Spring of the first year, the student will choose a mentor and a track. The student will submit the mentor selection form to the Dean's office (see Attachment D). After joining the Cancer Biology Track, the student will follow these guidelines. The supervisor must be a CB track mentoring faculty member conducting funded biomedical research. The supervisor must sign the Mentor Selection Form to indicate his/her willingness to support the student's stipend, benefits, and dissertation research expenditures and must provide an account from which funds for the stipend and benefits will be taken beginning September 1st of the second year.

V. Course Requirements

a. Required Courses

CSBL 6068: Cancer Biology Core 1. This course is the first part of the Cancer Biology Track core course. The first part of the course is oriented towards molecular biology. This course will provide an overview of current areas of research in the molecular biology of tumor formation. Areas that will be covered include oncogenes, tumor suppressor genes, telomere biology, DNA repair pathways and maintenance of genomic stability. The alteration of normal cellular pathways in the multi-step process of tumorigenesis will be discussed, as well as modes stem cells in cancer. (2 Semester Credit Hours)

CSBL 6069: Cancer Biology Core 2. This course is the second part of the Cancer Biology Track core course. The second part of the course is subtitled from bench to bedside. This course provides an overview of different cancers including lung, breast, prostate, colorectal, pancreatic, hematological and tumors of the nervous system. The pathology of the cancers as well as their molecular basis is presented. The basis for therapies and an introduction to clinical trials is discussed as well as chemoprevention. Current experimental approaches that will be presented include animal models, molecular diagnostics and tumor profiling. (2 Semester Credit Hours)

b. Mandatory Courses

INTD 6097: Research. Independent, original research under the direction of one of the mentors listed with the Cancer Biology Training Program. The trainee will learn how to design and execute scientific experiments as well as be trained in methodology. The trainees will carry out original cancer research for their dissertation.

CSBL 5089: Graduate Colloquium. This course is designed to provide graduate students with training in evaluating the scientific literature and in presentation of research in a seminar or journal club format. The course will focus on critical thinking, including evaluation of existing literature, interpretation of experimental results, and comparison of alternative models and interpretations. These tools are essential both for oral presentations and for writing grant proposals and manuscripts. Emphasis will be placed on evaluation of the science, organization of the manuscript, and on oral presentation skills. (2 Semester Credit Hours)

CSBL 5077: Scientific Writing. This course will develop skills in scientific writing and presentation of research results. It will emphasize learning-by-doing-and-re-doing. Students will write something every week. The capstone project for the students will be writing a grant proposal and defending it in front of the class. Topics to be covered include: (1) fundamentals of writing clearly; (2) principles of revision; (3) effective presentation of data; (4) fundamentals of oral presentation; (5) writing/presenting to the appropriate audience; (6) how to write background/introductory sections; (7) how to write materials and methods; (8) how to write the discussion section; (9) how to constructively critique one's own and other's writing. (2 Semester Credit Hours)

CSBL 5095: Experimental Design and Data Analysis. The purpose of the course is to provide an introduction to experimental design and statistical analysis. The emphasis of the course will be on the selection and application of proper tests of statistical significance. Practical experience will be provided in the use of both parametric and nonparametric methods of statistical evaluation. Among the topics to be covered are: data reduction, types of distributions, hypothesis testing, scales of measurement, chi square analysis, the special case of the comparison of two groups, analysis of variance, a posteriori multiple range tests, tests of the assumptions of parametric analyses, advanced forms of the analysis of variance, linear regression and correlation analysis. (2 Semester Credit Hours)

INTD 6002: Ethics in Research. This course will deal with topics relevant to ethics in scientific research. The course will be taught on a "case study" basis, dealing with real and hypothetical situations relevant to the conduct of scientific research. Topics discussed will include, but will not be limited to: data management, peer review, recognizing scientific misconduct, authorship, and The University of Texas regulations relevant to human and animal research. (0.5 Semester Credit Hours)

CSBL 6071: Supervised Teaching. Participation in the teaching program of the medical, dental, graduate or allied health curricula. (Semester hours vary depending on the time spent in teaching.)

INTD 6090: Seminar. Attendance and participation in the regularly scheduled seminar series is required during each fall and spring semester. Additionally the students will attend Cancer Biology Journal Club each semester. (1 Semester Credit Hour)

INTD 7099: Dissertation. Prerequisite: Admission to candidacy for Doctor of Philosophy degree. Registration for at least two terms is required of Ph.D. candidates.

c. Electives

In addition to the required courses, the pre-doctoral students are required to take 6 credit hours of electives. There are many courses available including courses in Genetics, Genomics, Stem Cell Biology, Advanced Cell and Molecular Biology, Biochemistry, Bioinformatics, the Biology of Aging and the Neurosciences. The students take electives that are aligned with their research. (See Attachment E).

VI. Grading Policy

Students in the IMG P are primarily the responsibility of the Graduate Dean for the first two semesters because students do not choose a track until April of the spring semester. Thus, academic policies for the IMG P students for the first two semesters will be determined by the Graduate Dean with input from track leaders, course directors, teaching faculty, and departmental chairs.

Policy:

This academic policy on remediation of courses is applicable to students who are enrolled in the first two semesters of the IMG P.

1. A minimum grade of B is required for required graduate courses in the IMG P. Remediation is required if a student makes less than a B grade in a required course.
2. A grade less than B is acceptable for elective courses in the IMG P or a course in a graduate program other than the IMG P.
3. A student must maintain an overall GPA of 3.0 to be in good academic standing.
4. The mechanism for remediation will be determined by the director(s) of the required course.
5. A student who is not required to remediate a required course may not engage in the remediation process with the intent of improving his/her original grade.
6. Once students have officially selected tracks, students must satisfy the remediation policies established by the track leaders and faculty for courses in their respective tracks.
7. This policy will be reviewed annually.

For the entire tenure, a minimum of a 3.0 cumulative grade point average must be maintained in order to remain in good academic standing. If a student receives a "D" or "F" in any course or a final grade of "C" in a Core Course (the Fundamentals or Cancer Biology core courses), he/she may be subject to dismissal from the Program. Additionally, if a student receives a grade of "C" or lower in a Core Course, remediation will be required. A grade of "B" or higher is required or the student will be subject to dismissal from the Program. If the cumulative grade point average drops below 3.0, the student shall be placed on academic probation. While on probation, a student must maintain a "B" average in all registered courses. If the grade point average drops below 3.0 in any semester during the probationary period or remains below 3.0 for one calendar year, the student may be dismissed from the Program. A 3.0 grade point average is required for admission to candidacy as well as for graduation.

VII. Requirements for Admission to Candidacy

a. Qualifying Exam

All Ph.D. students in the Cellular and Structural Biology Graduate Program are required to pass an oral Qualifying Examination. The Qualifying Examination shall consist of the student writing and then publicly defending a research proposal. It should be written in the format of an NIH-postdoctoral grant application (NIH form SF424_RR; Rev 6/2009) having a limit of 1 single-spaced page (not less than 11 font) to describe the Specific Aims and 6 pages for the Research Strategy including Significance, Background and Approach (including graphs, figures and tables). The section on Literature Citations should not exceed two pages. The specifics of the qualifying exam will be determined by the track; the topic of the proposal must be original and may not be the subject of the student's dissertation work. The purpose of the Qualifying Examination is to test the ability of the student (1) to formulate

an original hypothesis, (2) to design feasible experiments to test that hypothesis, and (3) to defend the resulting proposal. Individual tracks will be responsible for evaluating the grant proposal. The student's dissertation advisor cannot be a member of the Qualifying Examination Committee, but should attend the defense.

b. Dissertation Committee

After completion of the Qualifying Examination, the student, with the help of his/her research advisor, should choose a Dissertation Committee.

The committee must consist of at least five persons with the following suggested membership:

- a) A supervising professor and two credentialed faculty members in the same track as the student or the same department as the supervising professor;
- b) A credentialed faculty member whose primary appointment is not in the same department as the supervising professor;
- c) An expert in the area of the dissertation research and who has no appointment in the UTHSCSA.

Any exceptions to this prescribed committee structure must be justified in a memo to the Chair of COGS from the student and mentor. These requests will then be reviewed by COGS and a vote of approval/disapproval taken.

The first duty of this committee will be to assist the student in the planning of his/her dissertation project and in the writing of the dissertation proposal. It is the responsibility of the Dissertation Advisor to present the list of committee members to the COGS Chair and to the Seminar Chair for presentation to the Cellular and Structural Biology COGS (Attachment F).

The Dissertation Committee shall meet as a group with the candidate at least twice a year. No later than one week prior to each meeting, the student shall submit to the Dissertation Committee a report of progress on the dissertation research work, including statements of objectives of the research, methods, major results obtained, conclusions drawn, and proposed direction of future work. The Committee shall evaluate the progress made by the student and agree on the direction of future work to be undertaken. Each member shall complete an evaluation form for Ph.D. students (see Attachment G). It is the student's responsibility to give the Student Advisor the completed forms. The Dissertation Committee shall decide when the student's progress is sufficient to permit writing the dissertation.

c. Proposal

Note: The format for the written part of the Qualifying Examination and the Dissertation Proposal are identical; however, there can be no overlap in topics. All Ph.D. students in the Cellular and Structural Biology Graduate Program are required to write and defend a Dissertation Proposal. The dissertation proposal should be written in the format of an NIH-postdoctoral grant application (NIH form SF424_RR; Rev 6/2009) having a limit of 1 single-spaced page (not less than 11 font) to describe the Specific Aims and 6

pages for the Research Strategy including Significance, Background and Approach (including graphs, figures and tables). The section on Literature Citations is not included in the page limit, but it should not exceed two pages. The specifics of the Dissertation Proposal will be determined by the track (Attachment H).

After the written version is completed, it must receive approval by the local members of the student's committee. Thereafter, the student shall present the proposal to the department in a seminar to be given by the end of the summer semester of the second year. Two weeks before the seminar, the student shall provide a written copy of the proposal (Format described above) and the signed Recommendation for Approval of the Dissertation Research Proposal and Supervising Committee form (one of the items in Attachment J) to the Seminar Chair who will make copies of the proposal available to the graduate faculty for critical review. After the student has completed his/her presentation, the Seminar Chair will open the meeting for questions from the audience. After all questions have been exhausted, all in attendance, exclusive of the graduate faculty, shall be asked to leave and the Seminar Chair will open the meeting for the discussion of the proposal. At the end of the discussion, the graduate faculty shall vote for approval or disapproval of the dissertation proposal. A majority vote shall determine approval or disapproval. The composition of the Dissertation Supervising Committee will then be discussed and approved or disapproved by vote of the graduate faculty.

In the case of disapproval, the Chair of the COGS and the Seminar Chair will meet with the student and the dissertation advisor to present the reasons given for this decision. Based on this input, the student shall present a revised or new proposal to the COGS within three months.

d. Admission to Candidacy

After the student has passed the Qualifying Examination and has successfully presented a dissertation proposal to the graduate faculty, and removed all grades of "I" (Incomplete) from his/her record, the forms recommending his/her admission to candidacy (Attachment J) will be submitted to the Dean of the Graduate School. The student will then register for Dissertation (INTD 7099 or CSBL 7099) instead of Research hours. A student must register for Dissertation at least twice prior to graduation. He/she shall remain in residence in the Program and participate in all activities normally required of full-time graduate students until the Final Oral Examination has been conducted and the dissertation is completed and submitted to the for the Graduate Dean's Office awarding of the degree.

VIII. Student Evaluations

The performance of each predoctoral student will be evaluated by course directors and his/her dissertation supervising advisor and committee. The students will need to meet Grade Requirements as stated earlier for the courses he/she will take. For the first two years, the grade will be mainly based on reports from the laboratories in which the student has done rotations and on student participation in required course work, seminars, journal clubs and other track activities. After appointment of the dissertation supervising committee, the Research grade will be based on reports from the committee members after semiannual committee meetings (Attachment G), research evaluations based on the student's annual seminar, and participation in seminars, journal clubs and other activities. If a committee meeting has not been held within 6 months, a grade of "U" will be given for research

progress in that semester. However, if the student has already scheduled a committee meeting, the Student Advisor has the option of giving a grade of "I". Failure of a student to show satisfactory progress toward his/her degree goal based on the outcome of these evaluations may be grounds for dismissal from the Cancer Biology track.

IX. Awarding of Ph.D.

a. Dissertation Defense

The instructions for preparation and submission of the dissertation should be obtained from the Graduate Dean's Office (Attachment I). The student may opt to utilize either the traditional dissertation format or the optional chapter format. The Final Oral Examination shall be conducted by the Dissertation Committee. All interested persons may attend. Ordinarily the examination will be preceded by a seminar-type presentation of the research findings by the candidate. This presentation should not exceed 50 minutes. Immediately following the presentation, the members of the audience, exclusive of the Supervising Committee, shall be given the opportunity to ask questions. After these questions have been exhausted or within a reasonable length of time, the audience is to be excused. The examination shall continue with the Supervising Committee and the candidate only. Following completion of the examination, the Supervising Committee shall vote on the candidate's performance. More than one negative vote shall constitute failure. In the event of a failing performance, the Committee in consultation with COGS, shall decide on the appropriateness of another exam

b. Dissertation

The typing of drafts and the final copy, collating and proofreading of the dissertation are the responsibility of the student. The departmental secretarial staff shall not perform any of the above as part of its regular duties. Guidelines for the preparation of an electronic dissertation is maintained by the Dean's Office (http://gsbs.uthscsa.edu/files/resource/wa/7a/rsrc/2010_eDissertation_Instructions.pdf). A final copy of the dissertation must be submitted to the Chair of COGS of the Graduate Program in Cellular and Structural Biology.

c. Awarding of Degree

Once all requirements for the Ph.D. have been satisfied, the relevant paperwork (Attachment J) will be given to the Chair of COGS for processing and presentation to Graduate Faculty Council (GFC). After the Chair of COGS has approved the dissertation, the student must submit the final copy of the dissertation and all other supportive information to the Graduate Dean's Office. The recommendation of COGS is then presented to GFC.

X. Exceptions to Guidelines

Any requested exception to the Guidelines shall be voted upon by CBLC. If the CBLC votes to approve the request, then the request will be forwarded to CSBL COGS for final approval or disapproval.

XI. Attachments