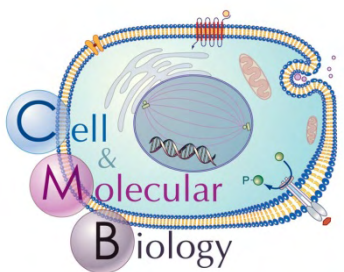


The University of Texas Health Science Center at San Antonio
Integrated Multidisciplinary Graduate Program (IMGP)

CELL AND MOLECULAR BIOLOGY (CMB) TRACK GUIDELINES

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I. Description

The Cellular and Molecular Biology (CMB) Track is designed for graduate students with a broad interest in investigating how prokaryotic and eukaryotic cells function as a living unit, respond to external cues, communicate with other cells, and contribute to the homeostatic and pathological processes in complex systems. The track has a strong emphasis in interdisciplinary approaches to graduate education and training to provide students with a broad foundation for future career development in more specialized areas of biomedical research and education. Students will be exposed to molecular, genetic, genomic, proteomic, structural and/or whole organism research approaches. The research interests of the faculty include signal transduction, cell cycle, DNA repair, apoptosis, cell-cell communication, cell migration, stem cell biology, regulation of gene expression, exo-/endo-cytosis, cytoskeleton, protein structure and complex assembly, post-translational modification, and protein degradation, as these processes relate to various human health issues such as aging, cancer, immune surveillance, infectious disease, neural, metabolic, and hereditary disorders, and development.

II. The Faculty

Faculty members in the CMB 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. A list of current CMB track faculty members is appended in Appendix A. Faculty rosters in the CMB Track will be reviewed every three years by the Track Credentialing Committee. The guidelines for credentialing of faculty participants in the CMB track is in Appendix B. The majority of the faculty have active research programs in their laboratories, which are funded by extramural and intramural grants. The research programs of the CMB track faculty will be presented along with the track graduate study guidelines to incoming students on Track Presentation Day which is organized by the GSBS Dean's office.

III. Track Governance Committee

The operation of CMB Track is governed by the Track Governance Committee (TGC), which is composed of track leader (chair of TGC), co-leader (chair of Credentialing Committee), chair of Recruitment Committee, chair of Curriculum Committee, chair of Candidacy Requirement Committee, Student Advisor, and Student Representative. Charges of each committee are described in Appendix E.

IV. Laboratory Rotations

Laboratory rotations are required of every Ph.D. graduate student in IMGPS before finalizing a track and a major for dissertation research. The laboratory rotations begin in the first fall semester and must be completed by the end of the first spring semester. Each rotation will be 6 weeks in duration, and each student will complete the equivalent of four rotations. 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 both the mentor and the student to assess whether the student is compatible with the mentor and his/her laboratory personnel. 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 track choice has been approved by the GSBS Dean.

V. Course Requirements for Ph.D. Candidates

A. Required Courses

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

The IMGP core course (INTD 5000) will expose a diverse group of students to a range of multidisciplinary topics. The focus of the core course is to promote the development of independent, critical and creative thinking skills, to teach students how to use information they learn, and to foster the development of skills in experimental design and data analysis. The course will accomplish these tasks by having students be active participants in their education. Active learning methods include, independent learning (assignments outside class), in-class participation, and small group discussions of concepts and the primary scientific literature. INTD 5000 core course centers around weekly “topics” that form a nucleus for presentation and discussion of “core concepts”. The course is designed for first-year graduate students matriculating into the integrated multidisciplinary graduate program.

2) **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 two to four different investigators. 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.

3) **CMB Track-Specific Core Course: Advanced Cell & Molecular Biology (INTD 5007, 3 credits, Spring 1st year).**

This Advanced Course for the Cell and Molecular Biology Track can be taken as a single 3 credit hours course. Alternatively, each of its three modules can be taken as a one-credit course either by CMB Track students or by students from any Track as an elective. The course provides a unique learning experience that prepares the student to evaluate and design new research in the cutting-edge areas of modern cell biology and molecular biology. Instead of a didactic program of lectures, the entire course comprises a small-group format in which students interact closely with a group of faculty who have active research programs. The modules focus on three very active areas of research in cell and molecular biology: DNA Damage and Cell Cycle; Cell Signaling; and Mitochondria and Cell Death. In each module, the faculty first provide students with a brief overview of the research area. Students and faculty will then jointly discuss key publications that serve to bridge the gap between the student's prior understanding of the field and the state of the art in that area.

4) **Ethics in Research (INTD 6002, 0.5 credits, S/U grading).**

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.

5) **Scientific Writing (CSBL 5077, 2 credits, Fall 2nd year).**

This course will provide students with the opportunity to develop skills in scientific writing and the presentation of research results. It will emphasize learning-by-doing-and-re-doing. Students will be required to write something every week. The capstone project for students will be to write a grant proposal and defend it in front of the class. One hour per week will be devoted to lecture and critique of published work; the other hour will consist of critique and revision of student writing by other students, as well as by the course director. 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, and (9) how to constructively critique one's own and others' writing.

6) Experimental Design and Data Analysis (CSBL 5095, 2 credits, Fall 2nd year).

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.

7) Colloquium (CSBL 5089, lecture, 2 credits, Spring or Summer 1st Year).

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.

8) Seminar Course (CSBL 6090, 1 credit, Starting in Fall 2nd year).

The CMB track is under the umbrella of the Cellular & Structural Biology Ph.D. graduate program (CSBL), therefore the student is required to register for and attend the Seminar Course (CSBL 6090, 1 credit) every semester starting in the fall semester of the second year. The course is organized by Student Seminar Chair and Journal Club Chair, two faculty members elected by CSBL Graduate Faculty. The policies for the evaluation and grading of CSBL 6090 will be established by the Course Directors, who are Student Seminar Chair and Journal Club Chair, in a format approved by CSBL COGS. The activities included in the seminar course are attendance at invited seminars, journal club and the student presentations including student annual progress and final dissertation and thesis presentations. Attendance and participation in the regularly scheduled Department seminar series is required each semester the course is offered. Participation includes giving presentations as outlined by the Course Directors in the course syllabus. Student research seminars are designed to ensure that students receive adequate opportunity to communicate and defend their research results (for Guidelines see Appendix F).

Journal Clubs

1. **Cancer Biology Track**, noon Fridays, Greehey Children's Cancer Research Center, Susan Naylor
2. **Tumor Immunology**, noon Wednesdays, Oak View Medical Building, 2040 Babcock Road, Tyler Curiel
3. **Hormone, Cell Signaling, and Cancer Therapy**, 9:00 am, Mondays, Ob-Gyn Conference Room 432F, Ratna Vadlamudi
4. **Microbiology and Immunology**: Noon, Wednesday, Microbiology Conference Room 5.028V, Michael Berton and Yan Xiang
5. **Biology of Aging**: Noon, Friday Atrium of the Barshop Building, Veronica Galvin

9) Research (INTD 6097 or CSBL 6097, credit to be arranged)

Independent, original research under the direction of a faculty advisor. (Credit to be arranged)

10) Dissertation Research (INTD 7099 or CSBL 7099, credit to be arranged)

Prerequisite: Admission to candidacy for Doctor of Philosophy degree. Registration for at least two terms is required of Ph.D. candidates. (Credit to be arranged)

B. Elective Courses

CMB track students are required to take elective courses totaling at least 6 credits from among the various advanced-level courses offered by faculty in the Graduate School. Seminar courses do not fulfill this elective credit requirement. Professional School's courses may be selected in consultation with the CMB Student Advisor. The CMB track urges students to take Methods in Cell Biology CSBL 5007 for 1 Credit offered in the Summer term.

C. CMB Track Curriculum Summary

1. CMB Track Curriculum: 72 credits are required to graduate.
2. Summary of Course requirement
 - a. Required Courses: 22.5 total Credits
 - i. Fundamentals of Biomedical Sciences INTD5000: 8 Credits
 - ii. Laboratory Rotations INTD 5008: 4 Credits
 - iii. Advanced Cell & Molecular Biology INTD 5007: 3 Credits
 - iv. Ethics in Research INTD 6002: 0.5 Credits
 - v. Scientific Writing INTD 5077: 2 Credits
 - vi. Exp. Design/Data Analysis CSBL 5095: 2 Credits
 - vii. Colloquium CSBL 5089: 2 Credits
 - viii. Supervised Teaching CSBL 6071: 1 credit
 - b. Elective Courses: 6 credits
 - i. Selected by students based on their research interests.
 - c. Others: 43.5 credits
 - i. Seminar Course (two semesters/yr) CSBL 6090: 8 Credits
 - ii. Research CSBL 6097: 35.5 Credits
3. Qualifying Exam: Spring 2nd year
4. Dissertation Proposal Presentation CSBL 7099: Summer 2nd year
5. Annual Progress Seminar (Seminar course): Every spring semester starting in 3rd year

VI. Grade Requirements

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 including the track-specific core course INTD 5007, he/she may be subject to dismissal. 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. The CMB Track Governance Committee will address insufficient grade on a case-by-case basis.

VII. Teaching Requirement

Doctoral candidates are required to register for and receive a grade of "Satisfactory" (S) for Supervised Teaching (CSBL 6071) once during their tenure in the Graduate Program. Fulfillment of this requirement is obtained through active participation (lecturing, laboratory teaching, etc.) in one of the graduate or professional school courses. A student must have first satisfactorily completed the course in which he/she intends to teach or obtain approval from the course instructor.

VIII. Requirements for Admission to Ph.D. Candidacy

A. Qualifying Examination

1. Overview of qualifying examination

The qualifying examination for admission to candidacy for the Ph.D. must be taken no later than June 30 of the second year that the student is in graduate school. The qualifying exam will be an oral examination administered by a qualifying examination committee. The purpose of the qualifying examination is to evaluate the ability of the student to develop and defend a research project and in addition, to assess his/her working knowledge of cell and molecular biology. Prior to the qualifying examination the student will write a NIH-type of research proposal for a postdoctoral fellowship, which will be submitted to the qualifying examination committee for its review and approval. One purpose of the qualifying examination is to test the ability of the student to develop an original hypothesis-driven research idea and design specific aims and experiments to tests that hypothesis. A second purpose is to determine if the student has developed an adequate working knowledge of cell and molecular biology. All graduate faculty members in the program are encouraged to attend the qualifying examination and to ask questions. The student's mentor is invited to attend, but may not participate in the examination.

2. Composition of the qualifying examination committee

The qualifying examination committee will consist of a Chair and at least four members of the graduate faculty in the program. The chair of the Candidacy Requirement Committee will serve as Chair of the qualifying examination committee. Two members of the committee will be chosen from the graduate faculty in the Cell and Molecular Biology Track by the chair and will serve for two years as members for all qualifying examinations. The term of service of these two members will be staggered such that they do not both rotate off the qualifying examination committee in a given year. The Chair and these two members of the committee are included to increase consistency among the qualifying examinations. Two additional members of the committee will be chosen by the Chair of the committee in consultation with the student.

a. Duties of the Chair of the qualifying examination committee

This individual will be the chair of the Candidacy Requirement Committee of the CMB track and will serve for 3 years as the Chair of all qualifying examination committees in the track. The Chair of the qualifying examination committee will review and approve the topic for the research proposal to be written by the student in preparation for the qualifying examination. Upon receipt of the written research proposal, the Chair of the qualifying examination will, in consultation with the student, select 2 of the 5 members of the qualifying examination committee. The student may exercise one veto. All subsequent communications between the student and the qualifying examination committee, particularly with regard to the acceptability of the qualifying exam research proposal, should be directed through the Chair of the committee. Once the research proposal is determined to be acceptable for a qualifying examination, the Chair of the committee will be responsible for scheduling a time and place for the examination and for communicating this information to the graduate faculty and students in the track. Following the completion of the examination, the Chair will direct and participate in the ensuing deliberations of the qualifying examination committee. In the unanticipated absence of one of the other members of the qualifying examination, the Chair will be responsible for finding a backup member.

b. Duties of members of the qualifying examination committee

Participation in qualifying examinations is one of the important responsibilities of a member of the graduate faculty in the Cell and Molecular Biology track. Agreement to serve on a qualifying examination committee is a commitment on the part of the faculty member to review and critique the research proposal prepared by the student and to be present and participate in the oral examination on the date agreed.

3. The qualifying exam research proposal

In the spring semester of the second year, the student will write a research proposal following the format for an NIH postdoctoral application. The format is the same as the dissertation proposal shown in Appendix G. The proposal will include: Specific Aims, Significance, Innovation, Approach, and Bibliography. The proposal must be on a topic different from the student's dissertation project and where relevant, should not be related to his/her Master's thesis. The student may seek faculty guidance related to methodologies with which he/she is unfamiliar, but may not receive help from anyone with the actual design and writing of the project. The written proposal will be reviewed and critiqued by the qualifying examination committee who may approve it as written or request that it be returned to the student for revision. The request for revision is to be accompanied by written constructive criticisms. The student will be allowed 2 revisions before he/she is required to defend the proposal as part of the qualifying examination. The proposal serves as a starting point for the qualifying examination, but the student will also be questioned to determine if he/she has a working knowledge of the discipline, in this case cellular and molecular biology.

Deadlines

The qualifying exam research proposal will be due no later than March 1 of the spring semester of the second year that the student is in the graduate program. The student will receive feedback as to whether his/her proposal is satisfactory within 2 weeks of that submission. If a revision is required, it will be due by April 1 of the same semester. The student will be notified within 2 weeks whether his/her revised proposal is acceptable. Should a second revision be required, it will be due no later than May 1 of the same spring semester. After submission of the second revision of the research proposal, the student must take his/her qualifying examination.

4. Format for the qualifying examination

At the start of the qualifying exam the student will be given 10 minutes to orally present his/her research proposal. Following this introduction, members of the committee will begin asking questions. The role of questioner will rotate among the members of the qualifying examination committee. After the members of the qualifying examination committee have completed their questions, the Chair of the Qualifying examination committee will ask if there are questions from other attending members of the graduate faculty. After the completion of all the questioning, which usually takes about 2 hours, the student will be asked to leave the room while the committee deliberates. After discussion, the members of the committee vote for pass, provisional pass or failure. Only members of the qualifying exam committee may vote. More than one negative vote will constitute failure. A provisional pass should be given if the qualifying examination committee feels that the written proposal requires further revision even though the student passes the oral examination.

In the case of failure the student will have the opportunity to take the examination a second time. The student must repeat the examination no later than August 31 of the second year in graduate school. If the student is given a provisional pass, all the contingencies associated with that conditional pass must be completed no later than August 31 of that summer. If the student fails a second qualifying exam or does not satisfy the conditions of the provisional pass by the designated deadline, he/she may be given the opportunity to switch to a Master's degree program or will be dismissed from the Ph.D. program.

B. Selection of Dissertation Supervisor

The student will choose a dissertation supervisor after completing the laboratory rotations. The supervisor must be a CMB 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 and their dissertation research expenditures. The account provided by the supervisor on the Mentor Selection Form will be used beginning September 1st of the second year for support of the student, as specified by the GSBS Dean <http://gsbs.uthscsa.edu/main/academics/graduprograms/phd/imgp/overview.asp>.

C. Dissertation Committee

Following the successful completion of the qualifying examination, the student in consultation with the supervising professor will choose a dissertation committee. The dissertation committee will consist of:

- i) at least three faculty members including the supervising professor from the Cell and Molecular Biology track or from the same department as the supervising professor;
- ii) A credentialed faculty member whose primary appointment is not in the same department as the supervising professor;
- iii) 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 of the Department of Cellular & Structural Biology (CSBL) from the student and mentor. These requests will then be reviewed by CSBL COGS and a vote of approval/disapproval taken.

The Dissertation Committee will 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 TGC Chair and to the Seminar Chair of CSBL Department for presentation to the CMB graduate faculty.

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. 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.

D. Dissertation Proposal

The format of the proposal is attached in Appendix G. After the written version is completed, the proposal must first be approved by all local members of the student's Dissertation Supervising Committee before the student presents the proposal to the faculty of the CMB track in a seminar to be given no later than the end of the summer semester of the 2nd year in graduate school. The approval form, Recommendation for Approval of the Dissertation Research Proposal and Supervising Committee (GSBS Form 30), is attached in Appendix H. Two weeks before the seminar, the student shall provide a written copy of the proposal and the signed approval form to the Seminar Chair of CSBL who will make copies of the proposal available to the graduate faculty for critical review. The description of the proposed work should not exceed ten single-spaced typewritten pages, using text not smaller than 11-point type. It should be written for a general scientific audience, being careful to avoid the use of jargon. The proposal should specify 1) the background and significance (one-two pages), 2) the hypothesis to be tested, 3) the specific aims, which includes a short rationale and strategy to carry out each aim (~one page), and 4) the experimental design including a general description of the methods and techniques to be utilized, predicted outcomes as well as alternative strategies. A brief bibliography of literature references that supports the text of the proposal should be included, but not exceeding two pages; it will not count in the ten page limit.

After the student has completed his/her presentation, the Seminar Chair of CSBL 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 track and CSBL 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 by vote of the track faculty.

In the case of disapproval, the Chair of the TGC 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 TGC within three months.

E. Admission to Candidacy

After the student has passed the Qualifying Examination and has successfully presented a dissertation proposal to the CMB track, and removed all grades of "I" (Incomplete) from his/her record, the form recommending his/her admission to candidacy (GSBS Form 32 in Appendix I) 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 two semesters 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 dissertation is completed and the Final Oral Examination has been conducted.

IX. 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 (Appendix J), 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 CMB track.

X. Awarding of Ph.D. Degree

A. Dissertation Defense

The instructions for preparation and submission of the dissertation should be obtained from the Graduate Dean's Office. Guidelines for scheduling of final oral examinations and binding of dissertations are attached in Appendix K. The student may opt to utilize either the traditional dissertation format or the optional chapter format. The student should have his/her Dissertation Supervising Committee members sign "Request for Final Defense and Oral Examination (GSBS Form 40)" in Appendix L and submit the form to the Graduate School Dean's Office 14 days prior to the Final Oral Examination. The Final Oral Examination shall be conducted by the Dissertation Committee. All interested persons may attend. 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 Dissertation 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 Dissertation Supervising Committee and the candidate only. Following completion of the examination, the Supervising Committee shall vote on the candidate's performance and fill out "Report on Final Examination (GSBS Form 43)" in Appendix M. 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. The Dissertation

The typing of drafts and the final copy, collating and proofreading of the dissertation are the responsibility of the student. The administrative staff shall not perform any of the above as part of its regular duties. A final copy of the dissertation must be submitted to the Chair of CSBL COGS.

C. Awarding of the Degree

Once all requirements for the Ph.D. have been satisfied, the relevant paperwork will be given to the Chair of CSBL 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.

XI. Exceptions to the Guidelines

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

XII. Appendices

Appendix A. List of the Credentialed Faculty Members in the CMB Track

Faculty Name	Department	Research Interests
Asmis, Reto	Medicine	Chronic inflammatory diseases, macrophages
Bai, Yidong	CSB	Mitochondrial function
Berton, Michael T.	Micro & Immunol	Regulation of immunity in infection, allergy and cancer; cytokine and Toll-like receptor signal transduction, regulation of gene expression
Bishop, Alex	CSB	Genomic instability, DNA repair, homologous recombination, cell signaling, cancer and aging
Bose, Santanu	Micro & Immunol	Anti-viral signaling against respiratory RNA virus
Chang, Tien-cheng (Arthur)	Medicine OB/GYN	Assisted reproductive technology, in vitro fertilization, embryonic stem cell, induced pluripotent stem cell, implantation, preimplantation genetic diagnosis
Chatterjee, Bandana	Molecular Med	Gene regulation; nuclear receptors; cancer cell biology; environmental carcinogenesis; transgenic/knock out mice; live cell microscopy
Chen, Xiao-Dong	Comprehensive Dentistry	Interactions of extracellular matrix and mesenchymal stem cells, development of biomedical tissue engineering
Clark, Robert	Medicine	Neutrophil phagocytosis upon microbial killing and tissue injury, gene regulation, cell signaling, reactive oxygen species
De Graffenried, Linda	CSB	Signal transduction, tumorigenesis, molecular therapeutics
Dong, Lily	CSB	Adiponectin signaling in Obese and Diabetes
Dube, Peter	Micro & Immunol	Endocytosis, bacteria/macrophage interaction
Eaton, Benjamin A.	Physiology	Synaptic growth, stability, and function in Drosophila
Galvan, Veronica	Physiology	Alzheimer's disease, nervous system, aging, mTOR pathway, stem cell
Gao, Shou-Jiang	Pediatrics	Viral oncogenesis, inflammation, angiogenesis, cancer invasion, microRNA, and herpesvirus entry, latency and reactivation
Ghosh, Rita	Urology	Melanoma, DNA damage, GU and skin cancer
Ghosh-Choudhury, Nandini	Pathology	Gene expression, growth factor, signal transduction, kinase, breast cancer, metastasis, transgenic models, knockout mice, reactive oxygen species
Hinck, Andrews	Biochemistry	Protein structure and function
Hornsby, Peter	Physiology	Cell transplantation, cellular aging
Hu, Yanfen	Molecular Med	BRCA1, breast cancer, gene expression and regulation
Jiang, Jean	Biochemistry	Intercellular and intracellular signaling, amino acid transport
Kadosh, David	Micro & Immunol	Cell morphology, filamentous growth, fungal pathogenesis, gene regulation, genomics
Kim, Chongwoo	Biochemistry	Structural basis gene regulation, Polycomb Group proteins in development and cell homeostasis
Kim, Dae Joon	Pharmacology	Regulation of cell proliferation, differentiation, and survival protein tyrosine kinases & phosphatases, UVB-induced skin carcinogenesis

Kirma, Nameer	Obstetrics & Gynecology	Hormonal carcinogenesis in breast cancer; transforming growth factor in gynecological malignancy and benign disease
Kraig, Ellen	CSB	Immune system, cell regulation
Kumar, A. Pratap	Urology	Molecular targets, cancer therapy
Lafer, Eileen	Biochemistry	Clathrin mediated endocytosis, Synaptic vesicle recycling, Molecular mechanisms underlying clathrin coat assembly and uncoating
Larsen, Pamela	CSB	Metabolism, stress resistance, aging
Lechleiter, James D.	CSB	Molecular and cellular mechanisms of protection during ischemic stress, acute brain injury and aging
Lee, John	Biochemistry	Skeletal system
Li, Rong	Molecular Med	Breast cancer, BRCA1, hormone-dependent gene regulation, obesity, adipose tissue, tumor microenvironment
Li, Senlin	Medicine	Gene therapy, macrophage, viral vector, neurodegenerative diseases, Parkinson's disease, Alzheimer's disease, atherosclerosis, aging, stem cell, hematopoietic stem cell, rejuvenation
LoVerde, Philip	Biochemistry	Molecular, Genetic and Immunological Investigation of the human blood fluke, Schistosoma mansoni
Lu, Xin-Yun	Pharmacology	Neurobiology of stress-related disorders, Depression and obesity, Leptin signaling in the central nervous system
Luduena, Richard	Biochemistry	Protein tubulin, drug development, cancer
Maffi, Shivani	Medicine	Neurobiology, addiction biology, mitochondrial dynamics
McCarrey, John R.	UTSA	Cellular biology; cellular development and differentiation
McEwen, Donald	Biochemistry	Apoptosis, development, cell signaling, planar cell polarity, oncogenesis
Morgan, William	CSB	Neurodegeneration, aging, gene expression, transgenic models
Naski, Michael	Pathology	Skeletal development, bone and cartilage, osteoblast and chondrocyte, Wnt signaling, Runx2, FGF and FGF receptors
Naylor, Sue	CSB	Genetics, Tumor Suppressor Genes
Nicholson, Bruce	Biochemistry	Molecular and Cell Biology of Intercellular Communication
Oddo, Salvatore	Physiology	Alzheimer's disease, neurodegeneration, aging, transgenic mice, dementia
Oyajobi, Babatunde	CSB	Cancer-induced bone diseases, preclinical models of cancer-induced bone diseases, small animal imaging
Penalva, Luis	CSB	Post-translational regulation
Pereira-Smith, Olivia	CSB	Aging, cell cycle regulation
Ran, Qitao	CSB	Oxidative stress, aging, Alzheimer's disease
Ranjan, Ravi	Pharmacology	Aging, mechanism of neurotransmitter secretion
Rao, Hai	Molecular Med	Ubiquitin, regulated proteolysis, protein quality control, prion diseases
Rao, Manjeet	CSB	Small regulatory RNAs, cancer
Rebel, Vivienne	CSB	Cell intrinsic and -extrinsic (microenvironment mediated) mechanisms regulating (normal and/or cancer) stem cells
Reddick, Robert	Pathology	Pathogenesis of vascular disease, atherosclerosis and mouse models of neoplasia,
Saikumar, Pothana	Pathology	Cell injury, cell death, oncogenes
Shiio, Yuzuru	Biochemistry	Quantitative proteomics, ICAT (isotope-coded affinity tag), ubiquitin

		ligases, VHL, BRCA1, protein secretion, senescence, cancer biomarkers
Sun, LuZhe	CSB	Cancer biology, Signal transduction, Cell cycle, Cell senescence, Experimental therapeutics
Tekmal, Rajeshwar	Obstetrics & Gynecology	Growth factor/hormone crosstalk, signal transduction, steroid hormone coactivation
Toney, Glenn M.	Physiology	Neurotransmitters, neuropeptides, membrane channels, neuronal osmosensation
Vadlamudi, Ratna K.	Obstetrics & Gynecology	Nuclear receptors, coregulators, hormone, growth factor, chromatin regulation, epigenetics, cytoskeleton signaling, kinases, breast cancer
Walss-Bass, Consuelo	Psychiatry	Schizophrenia, neuregulin
Walter, Chris	CSB	DNA repair, mutagenesis, mitochondria, transgenic mice, aging, spermatogenic cells
Yew, Renee	Molecular Med	Vertebrate cell cycle regulation, DNA replication initiation, Ubiquitin-mediated proteolysis and signaling, Tumor suppressor function
Yuan, Zhi-Min	Radiation Oncology	Stress response, tumor suppressor gene, tumor microenvironment, experimental therapeutics
Zhong, Guangming	Micro & Immunol	Microbial manipulation of mammalian cell apoptosis and other signaling pathways, Infection and Immunity, Vaccine

Appendix B. Guidelines for Credentialing of Faculty Participants in CMB Track

To participate in the activities of the Cell and Molecular Biology (CMB) track, each faculty member must be credentialed as a member of the Graduate Faculty. The CMB track follows the policies established by the Graduate School of Biomedical Sciences for the Integrated Multidisciplinary Graduate Program (IMGP). Furthermore, the CMB track is imbedded in the Cellular & Structural Biology PhD program. Therefore, C&SB COGS will approve or disapprove Graduate Faculty membership recommendations from the CMB Track. Recommendations for credentialing as Graduate Faculty in the CMB Track will be made by the Track Governance Committee (TGC).

Track Credentialing Request Form and Track Faculty Membership Application Form are posted on the Faculty & Research Resources page under the heading “Credentialing Request Forms” (http://gsbs.uthscsa.edu/files/resource/w0/80/rsrc/Credentialing_Request_Forms.pdf) of the Graduate School for Biomedical Sciences website.

1. Credentialing Committee Composition

The Track Governance Committee members participating in credentialing will include the Track Leader and Co-leader, the Recruitment chair, the Curriculum chair, the Candidacy Requirement chair, and the Student advisor. One of these faculty members, other than the track leader, will serve as chair for the credentialing tasks in order to distribute governance responsibilities. The composition of this committee will change annually with the membership rotating as outlined in the CMB track organization document.

2. Levels of Participation of Faculty Members

- A. Mentoring faculty are those faculty members who participate in all activities of the graduate training experience including teaching advanced courses, track-specific committee work, and mentoring dissertation research of graduate students as supervising professor. Mentoring faculty criteria:
- i. must have a Ph.D., M.D., D.D.S., or D.V.M. degree, or equivalent
 - ii. must be considered an independent investigator
 - iii. must possess defined laboratory space
 - iv. must be willing to participate in the full range of graduate education, including teaching, providing rotation experiences in their laboratory, and serving on graduate education-related committees
 - v. to accept each student, the mentor must document funding support of the student for a minimum of three years and must have written approval of the Chair of the mentor’s department
- B. Non-mentoring faculty are those faculty members who participate in all activities of graduate training except serving as supervising professor. Non-mentoring faculty criteria:
- i. must have a Ph.D., M.D., D.D.S., or D.V.M. degree, or equivalent
 - ii. must serve a vital need in graduate education for the Cell and Molecular Biology Track without serving as a supervising mentor

3. Credentialing Process

- A. Faculty credentialed as graduate faculty in an existing UTHSCSA Ph.D. program as of May 1, 2008 are grandparented in as CMB Track faculty and need not complete a Track Credentialing Request Form nor be re-credentialed at this time.
- B. Faculty seeking to become members of the CMB Track who are not currently part of the graduate faculty must submit to the graduate Dean’s office a completed application form and attach a current CV. The Credentialing Committee will receive applications from the graduate Dean’s office.
- C. In addition, faculty seeking to be credentialed in the CMB Track must submit a letter to the CMB Credentialing Committee chair that documents their mentoring history, outlines their teaching experience and details their anticipated role in the CMB track. The application package will be reviewed by credentialing chair to determine if the applicant should be granted a seminar or declined in consultation with TGC.

- D. Each faculty applicant for credentialing as mentoring faculty member must present an open and advertised UTHSCSA research seminar.
- E. The Credentialing Committee will review the completed application, applicant's letter, and make a final recommendation regarding acceptance into the CMB track.

4. Review of Graduate Faculty Credentials

Faculty rosters in the CMB Track will be reviewed every three years by the Track Credentialing Committee to assure that they are contemporary and indeed address the activities of the Track. The ongoing participation and contribution to the CMB track for each faculty participant will be evaluated and their interest in continuing membership determined.

Appendix C. Guidelines for CMB Track Administration

Several faculty members will oversee the administration of the Cell and Molecular track as members of Track Governance Committee (TGC). The members of TGC and the term of each position are:

Leader of CMB Track – 3 yrs. Elected by CMB track faculty and approved by the Graduate Dean.

CMB track faculty member. Ideally, the individual will have previously served as a co-leader. Will serve as Chair of TGC and oversee the efficient execution of all activities of the track so that the Graduate Program is carried out in an organized fashion, consistent with the approved guidelines. Will schedule Track administration meetings and report Track activities to COGS.

Co-leader of CMB Track – 3 yrs. Elected by CMB track faculty and approved by the Graduate Dean.

CMB track faculty member. Will work with the leader for the efficient execution of all activities of the track and represent the track when the leader is absent. Co-leader will normally serve as Chair of the Credentialing Committee. The Credentialing Committee is composed of the members of TGC and charged to credential applicants for the admission to the track faculty and to periodically review the faculty credentials.

Recruitment Chair – 2 yrs. Appointed by the TGC.

CMB track faculty member. Will appoint and work with a committee of four members chosen to reflect the various research areas of the CMB track faculty. Provisions should be made for staggering terms of Committee members. The committee is charged to organize the track handbook and track presentation to the first year MD/PhD and PhD students. The chair will also serve as one of CMB track representatives on the IMGP Admissions Committee.

Curriculum Chair – 2 yrs. Appointed by the TGC.

CMB track faculty member. Will appoint and work with a committee of four members chosen to reflect the various research areas of the CMB track faculty. Provisions should be made for staggering terms of Committee members. The course director of the CMB track-specific core course should be a member of the committee. The committee is charged with developing and reviewing the CMB track curriculum and with reviewing and recommending new course proposals to the CSBL COGS.

Candidacy Requirement Chair – 3 yrs. Appointed by the TGC.

CMB track faculty member. Will appoint and work with a committee of two members chosen to reflect the various research areas of the CMB track faculty. One faculty member will need to have been appointed as chair-elect and serve for at least one year before assuming the position of the candidacy requirement committee chair. Provisions should be made for staggering terms of Committee members. The committee is charged with developing and reviewing the requirements for admissions to PhD candidacy and awarding of Ph.D. degree. The chair will serve as the qualifying examination committee chair for CMB track students.

Student Advisor - 3 yrs. Appointment by the TGC.

CMB track faculty member. Will advise CMB track students, carry out student evaluations, monitor course requirements, and assure that deadlines and committee appointments are met. The outgoing Student Advisor will assist the newly appointed Student Advisor with Orientation and other August activities to facilitate the transition.

Student Representative – 1 yr. Appointment by the TGC.

CMB track student. Will convey students' concerns to the TGC and participate in discussion of track operation at the TGC meetings, but will be excused from the discussion on individual students.

Appendix D. Guidelines for Presentation of Student Seminars

WHY? To provide students with the opportunity to develop seminar presentation skills.

To provide faculty the opportunity to evaluate the student's progress on the research aims and to contribute their expertise.

WHEN? Second year students will present their dissertation proposals, including rationale and background, aims, any data obtained to-date, and the approaches to be used in the future.

More senior students will present a progress report each year. The goal is to up-date the track and department on the aims, progress, and work remaining.

WHAT? Important components to include in **all** student seminars:

Introduction: presentation of the biological background which leads to the question being addressed.

Hypothesis: clear statement of the BBQ (big biological question) and/or your working hypothesis

Specific Aims: each specific aim should be presented. For each aim, the student should be certain to note any changes made to the plan, discuss progress and conclusions to-date, note any problems and efforts to circumvent them, and describe briefly future experiments left to perform.

Summary: restate progress to-date on all aims. Provide general conclusions and implications. What progress has been made in addressing the BBQ?

HOW? Students should present a clear, concise seminar which has been practiced first with the mentor!

Slides should be carefully designed and checked ahead of time for visibility. Avoid the use of too much information on a single slide, print that is small and hard to read and colors that are difficult to discern on the background.

Appendix E. Format for the Dissertation Proposal

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 (http://grants.nih.gov/training/F_files_nrsa.htm) having a limit of one page for Specific Aims and 6 single-spaced pages (not less than 11 point) to describe Significance, Innovation, Approach. The section on Literature Citations is not counted towards the 6-page limit, but should not exceed two pages and should include the titles of each referenced article.

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.

Appendix F

GSBS Form 30: RECOMMENDATION FOR APPROVAL OF DISSERTATION RESEARCH PROPOSAL AND SUPERVISING COMMITTEE

Appendix G

GSBS Form 32: PETITION FOR ADMISSION TO CANDIDACY for the degree of DOCTOR OF PHILOSOPHY

Appendix H: Student Evaluation Forms for Year 2 to Year 5 (Copy of CSBL Program)

Cell and Molecular Biology Track

Evaluation by the Committee Members - Second Year Ph.D. Student

Student Name:

Month/Year Started Program:

Date of Meeting:

The student should complete the information above and distribute forms to faculty at his/her scheduled committee meeting.

Mentor: Please answer the following questions and comment on issues that particularly need improvement.

1. Is the student attentive and hard-working?
2. Have potential committee members been identified?
3. Is the student becoming acquainted with the literature appropriate for the project?
4. Does the student design experiments and include appropriate controls?

Mentor and other committee members: Please answer the following questions and comment on issues that particularly need improvement.

1. Is there an identifiable experimental plan?
2. Is there an identifiable hypothesis being tested?
3. Is the project feasible?
4. Was there an adequate explanation as to why the experiments are being conducted?
5. Is the student well informed?
6. Were the student's responses to questions clear and to the point?

Additional comments:

Committee Member Name (please print):

Signature:

Overall Evaluation of research progress (*Please circle or print*): _____

U Unsatisfactory

S Satisfactory for this point in the program

E Excellent

After each committee member has completed the evaluation, the student should collect the evaluations, review them with his/her supervising professor and then make two copies. One copy should be kept by the student; one copy should be given to Ms. Jo Gail Stark for inclusion in the student's file and the originals should be forwarded to the Track Student Advisor.

Cell and Molecular Biology Track
Evaluation by the Committee Members - Third Year Ph.D. Student

Student Name:

Month/Year Started Program:

Date of Meeting:

Has preliminary exam been taken?

Has dissertation proposal been approved:

The student should complete the information above and distribute forms to faculty at his/her scheduled committee meeting.

Committee member: *Please comment on issues that particularly need improvement.*

Was the presentation thorough and understandable?

Does the student have the appropriate command of the literature?

Have at least some experiments been done thoroughly and finished?

Do individual experiments appear to be well planned with appropriate controls?

Does the student understand the limits of his/her experiments?

Is the dissertation project feasible in a reasonable period of time?

Are the student's responses to the questions clear and to the point?

Is the student applying personal initiative to the project?

Additional comments:

Committee Member Name (please print):

Signature:

Overall Evaluation of research progress (*Please circle or print*): _____

U Unsatisfactory

S Satisfactory for this point in the program

E Excellent

After each committee member has completed the evaluation, the student should collect the evaluations, review them with his/her supervising professor and then make two copies. One copy should be kept by the student; one copy should be given to Ms. Jo Gail Stark for inclusion in the student's file and the originals should be forwarded to the Track Student Advisor.

**Cell and Molecular Biology Track
Evaluation by the Committee Members - Fourth Year Ph.D. Student**

Student Name:

Month/Year Started Program:

Date of Meeting:

Has preliminary exam been taken?

Has dissertation proposal been approved?

Written progress: Presented a paper or poster at national meeting? _____

Contributed to writing a paper or review? _____

Authored his/her own paper? _____

The student should complete the information above and distribute forms to faculty at his/her scheduled committee meeting.

Committee member: *Please comment on issues that particularly need improvement.*

Was the presentation done well?

Is the work sufficiently thorough, timely, and valid to form the basis for publication?

Is the student adequately focused on a specific plan for finishing the dissertation?

Has the student thoroughly considered the meaning of his/her results?

Is the student's depth of knowledge and facility to deal with problems characteristic of an expert in his/her chosen field?

Additional comments:

Committee Member Name (please print):

Signature:

Overall Evaluation of research progress (*Please circle or print*): _____

U Unsatisfactory

S Satisfactory for this point in the program

E Excellent

After each committee member has completed the evaluation, the student should collect the evaluations, review them with his/her supervising professor and then make two copies. One copy should be kept by the student; one copy should be given to Ms. Jo Gail Stark for inclusion in the student's file and the originals should be forwarded to the Track Student Advisor.

Cell and Molecular Biology Track
Evaluation by the Committee Members - Fifth (or beyond) Year Ph.D. Student

Student Name:

Month/Year Started Program:

Date of Meeting:

Has preliminary exam been taken?

Has dissertation proposal been approved?

Written progress: Presented a paper or poster at national meeting? _____

Contributed to writing a paper or review? _____

Authored his/her own paper? _____

Target date for graduation: _____

The student should complete the information above and distribute forms to faculty at his/her scheduled committee meeting.

Committee member: *Please comment on issues that particularly need improvement.*

Was the presentation done well?

Is the work sufficiently thorough, timely, and valid to form a basis for publication?

Is the student adequately focused on a specific plan for finishing the dissertation?

Is the student's depth of knowledge and facility to deal with problems characteristic of an expert in his/her chosen field?

Is the student likely to graduate by the target date listed above?

Additional comments:

Committee Member Name (please print):

Signature:

Overall Evaluation of research progress (*Please circle or print*): _____

U Unsatisfactory

S Satisfactory for this point in the program

E Excellent

After each committee member has completed the evaluation, the student should collect the evaluations, review them with his/her supervising professor and then make two copies. One copy should be kept by the student; one copy should be given to Ms. Jo Gail Stark for inclusion in the student's file and the originals should be forwarded to the Track Student Advisor.

Appendix I. Scheduling for Final Oral Examinations and Binding of Dissertations

There are certain procedures that must be followed for a student to complete in any given semester. The following is a suggested schedule for completion of the dissertation or thesis:

- Step 1.** Submit to the Supervising Professor and Supervising Committee a final draft of the Dissertation or Thesis. Allow 3 weeks for review and comments.
- Step 2.** Email Dr. Sophia Pina (pina@uthscsa.edu) a final electronic draft in pdf format of the Dissertation or Thesis. Allow three weeks for review and comments.
- Step 3.** Submit the following to Janice Stong in the Graduate Dean's Office 15 days before the scheduled date of the final oral examination.

* Form 40: Request for Final Oral Examination

http://gradschool.toolbox.net/files/resource/wi/2i/rsrc/FORM_40.pdf

*3 copies of the abstract and vita

Note: For the final Oral Examination, a room should be reserved by the department's academic or COGS coordinator.

Allow sufficient time between the Final Oral Examination and the Graduate Faculty Council meeting, to complete any content or formatting changes or corrections to the Dissertation or Thesis that are required by the Supervising Committee, Committee on Graduate Studies or Dean's Office.

Step 4. Submit the following to Janice Stong in the Graduate Dean's Office **7 days** prior to the Graduate Faculty Council meeting:

* Form 41 for MS or Form 43 for PhD: Report on Final Oral Examination (signed by all members of the Supervising Committee and Chair of COGS).

http://gradschool.toolbox.net/files/resource/wi/2i/rsrc/FORM_41.pdf

http://gradschool.toolbox.net/files/resource/wf/7f/rsrc/FORM_43_Rept_Final_Oral.pdf

*Approval Page taken from Dissertation/Thesis signed by Supervising Committee and COGS Chair.

Step 5. The outcome of the final oral examination and fulfillment of degree requirements must be reported to and approved by the Graduate Faculty Council at its monthly meeting. The Graduate Faculty Council meets on the second Friday of each month.

Following approval of your dissertation/thesis by the Graduate Faculty Council, and prior to leaving this institution, the following forms can be found at the GSBS website

<http://gradschool.toolbox.net/students/studentresources/current> and should be submitted to Janice Stong:

Graduation Forms, Master of Science

[Copyright Disclaimer](#)

[Forwarding Address Form](#)

[Library Copyright Permission](#)

[Listing Of Schools](#)

[Copyright Disclaimer](#)

[Forwarding Address Form](#)

[Library Copyright Permission](#)

[Listing Of Schools](#)

[Survey Of Earned Doctorates](#)

Step 6. Binding instructions. A Memorandum for Binding can be obtained from Ms. Jo Gail Stark. This memo along with the correct number of dissertations/theses (printing on cotton paper is optional) are taken directly to the UTHSCSA library for binding and payment. **The UTHSCSA library will not make copies from your electronic dissertation/thesis.** Payment can be made by cash, check or credit card to the UTHSCSA library.

Appendix J

GSBS Form 40: **REQUEST FOR FINAL DEFENSE AND ORAL EXAMINATION**

Appendix K

GSBS Form 43: **REPORT ON FINAL ORAL EXAMINATION**