

THE POLICY HANDBOOK

for

THE MOLECULAR BIOPHYSICS AND BIOCHEMISTRY TRACK

Within

THE BIOCHEMISTRY GRADUATE PROGRAM

at

THE UNIVERSITY OF TEXAS HEALTH SCIENCE CENTER

AT SAN ANTONIO

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* Master copies of these forms are included for making copies as needed.

** GSBS forms should be downloaded from the Graduate School of Biomedical Sciences: <http://gsbs.uthscsa.edu/main/currentstudents/currentstudentresources.asp>

GRADUATE PROGRAM IN BIOCHEMISTRY THE UNIVERSITY OF TEXAS HEALTH SCIENCE CENTER

A. ORGANIZATION

1. Introduction

The Graduate Program in Biochemistry is administered by the Department of Biochemistry of The University of Texas Health Science Center at San Antonio. The Molecular Biochemistry and Biophysics (MBB) track operates under the auspices of the Department of Biochemistry. The guidelines in this document established for the Graduate Program in Biochemistry therefore also apply to **all** MBB students and their faculty mentors, regardless of the home Department in which the faculty mentor resides. All graduate programs and tracks in the basic biomedical sciences are components of the Graduate School of Biomedical Sciences. The UTHSCSA Catalog and the UTHSCSA Student Guide contain information pertaining to the policies and procedures of the Graduate School. The organization, policies, and operating procedures of the Graduate Program in Biochemistry are presented in this document.

2. Committee on Graduate Studies (COGS)

The Committee on Graduate Studies establishes policies and procedures of the Graduate Program in Biochemistry. This committee, consisting of participating faculty in the Graduate Program in Biochemistry and its tracks and one student representative, coordinates activities under the auspices of the Biochemistry Program and acts on such matters as curriculum, procedures, assignment of Supervising Professors, evaluation of students, and other pertinent policy considerations. The faculty and student composition of COGS is described in Appendix I.

Faculty members of this committee are appointed by the Chair of the Department of Biochemistry for renewable, one-year terms. The Graduate Advisor serves as Chair of the Committee and is appointed by the Chair of the Department for a five-year term. The student representative is elected by the graduate students of the Graduate Program in Biochemistry and serves a one-year term.

The student representative participates in all activities of the Committee except in evaluation of students in the Graduate Program.

The Graduate Advisor may make decisions consistent with well-established policies of the Program. These decisions include the following: approval of the composition of student committees, approval of course substitutions, recommendation of advancement to candidacy, approval of dissertation formats, and

lifting of probation by completion of remedial requirements. It is the responsibility of the Graduate Advisor to keep the other members of COGS informed about the status of all graduate students. The Graduate Advisor should seek a majority vote of COGS members prior to any of the following: approval of dissertation and thesis proposals, placement on probation, recommending dismissal of a student from the program, granting unprecedented course substitutions, establishing new policies, denying petitions, assigning students permanently to Supervising Professors, granting a change of Supervising Professor, or waiving any departmental requirements.

3. Faculty Participating in Biochemistry Graduate Program.

A list of faculty members participating in the Molecular Biophysics and Biochemistry Track is presented in Appendix II.

B. Ph.D. PROGRAM

1. Curriculum and Supervision

a. Course Program

The Graduate Advisor assists students in planning an academic program until the student selects a Supervising Professor. First-year course requirements include all those specified by the Integrated Multidisciplinary Graduate Program (IMGP) together with BIOC 5074 Quantitative Biochemistry, INTD 6002 Ethics in Research, and two-three credits of required advanced biochemistry courses, either BIOC 6036 Macromolecular Structure and Mechanism (1 credit) and BIOC 6037 Integration of Metabolic Pathways (2 credits), or BIOC 5087 Molecular Biochemistry (2 credits). Course selection depends upon which course is offered during Spring semester of the first year. Whichever required course(s) is not taken during year 1 will be taken Spring Semester of year 2. The only other required course is BIOC 5085, Biophysical Methods in Biology (2 credits), which is offered every other year and will be taken Fall Semester of the second or third year.

In addition to the above, the following points are noted:

- i. Students are required to obtain three from a panel of six elective, 2-credit, biochemistry courses. These courses are listed on page 7 of this Policy Handbook. A student may substitute a full-semester course in another track (at least 2 credit hours) if approved in advance by the student's mentor and COGS provided they obtain a minimum grade of B). A maximum of two substitutions is permitted. These six elective course credits are to be completed

- by the end of the third year (sixth semester).
- ii.* Students are required to attend and participate actively in all departmental seminars. Students in years 3-5 are required to attend all sessions of BIOC 6069, Contemporary Biochemistry Student Review, which is given in the Fall semester each year. It is important to note that students in years 3-5 are required to give a presentation at least **once** during this timeframe, or they will not be permitted to graduate, even if the dissertation has been completed successfully.
 - iii.* The course program for two academic years is presented on the next page. The six advanced courses are presented in a twenty-four month cycle. Course offerings are subject to change. For detailed scheduling, students should consult the Graduate Advisor and the UTHSCSA catalog.
 - iv.* The minimum full-time load is nine semester hours during the Fall and Spring and six semester hours during the Summer. Students enrolled in the Graduate Program in Biochemistry and its tracks must participate on a full-time basis. Employment outside of the Department is strongly discouraged. Outside employment will not be permitted if it interferes with the student's performance and obligations.
 - v.* Five and one-half years is the time normally required to complete the Ph.D. degree requirements in the Molecular Biophysics and Biochemistry Track. A recent Board of Regents rule established in the year 2000 makes students who exceed 130 credit hours subject to non-resident tuition. 130 credit hours corresponds to approximately 5.5 years.

MAJOR BIOCHEMISTRY DEPARTMENT COURSE OFFERINGS

REQUIRED ADVANCED COURSES (EACH COURSE IS TAUGHT EVERY OTHER YEAR)

- BIOC 5085 Biophysical Methods in Biology (2 credits)
- BIOC 5087 Molecular Biochemistry (2 credits)
- BIOC 6036 Macromolecular Structure and Mechanism (1 credit)
- BIOC 6037 Integration of Metabolic Pathways (1 credit)
- BIOC 5091 Special Topics in Biochemistry:
Quantitative Biochemistry (1 credit)

ELECTIVE ADVANCED COURSES

(EACH 2-CREDIT COURSE IS TAUGHT EVERY OTHER YEAR)

- BIOC 5083 Hydrodynamic Methods
- BIOC 5091 Special Topics in Biochemistry: Nuclear Magnetic Resonance
Spectroscopy for Biochemists
- BIOC 6015 Metabolic Disorders
- BIOC 6010 Gene Expression
- BIOC 6035 Biochemistry of Multimolecular Complexes
- INTD 6043 Structure & Function of Membrane Proteins
- INTD 6033 Cell Signaling Mechanisms

An approved 2 credit, graded course in another track

Research (BIOC 6097), Thesis (BIOC 6098), and Dissertation (BIOC 7099) are offered every semester. Scientific Writing (BIOC 6071; written progress reports) and Supervised Teaching (BIOC 6071) are offered only during the Fall semester.

b. Teaching Requirement

Each student is required to participate in the teaching program of the Department of Biochemistry for a minimum of one semester: one semester hour of credit per semester of teaching, while enrolled in a special graduate course in Supervised Teaching (BIOC 6071). The student receives a grade from the faculty member(s) who serves as the Director of the course to which the student is assigned. Assignments to courses are made by the Committee on Graduate Studies. Students may be given assignments at any time during their matriculation.

c. Dissertation Supervising Professor

The supervising professor is chosen in the second semester of the first year at the end of the IMGP laboratory rotations. The IMGP provides stipends for first-year students. It is expected that second-year students be supported from research grants of the Supervising Professor. The Department will make every effort to provide stipends to graduate students should a loss of grant funds occur.

d. Evaluation of Students

Each grading period, a grade of satisfactory (S) or unsatisfactory (U) for research credits is given by the Supervising Professor. In addition, research progress is evaluated at semi-annual meetings of the student with the Dissertation Supervising Committee. The first such meeting is held in the Fall semester of the second year. A written progress report is submitted to each member of the Dissertation Supervising Committee at least one week before the Fall meeting. During the Spring semester, a written progress report is not required, although the student and the Supervising Committee are required to meet to discuss the student's progress orally. Any student who receives a grade of excellent from all members of their dissertation committee during the fall meeting will be excused from having a meeting during the spring semester. A recommended format for the written report is described in Appendix IV. Faculty expect that by the fourth year of matriculation, students will have completed a sufficient portion of their dissertation work to comprise a complete manuscript, so it is strongly recommended that students in their fourth year and beyond write the progress report in the form of a manuscript for journal publication. Those portions of the dissertation research that have not been completed to the stage of a full manuscript could still be in manuscript format for the progress report with indications of where incomplete methods, data, and discussion will be placed in the manuscript.

An exception to this schedule occurs in the Spring semester for third year students completing requirements for the dissertation research proposal as described

in Section B. 3. Note that for second year students, the Qualifying Examination taken in the Spring semester does not substitute for their oral meeting with their Dissertation Supervising Committee.

At the progress meeting, the student summarizes in 10 minutes the results obtained since the previous meeting. During the oral presentation the student should be prepared to summarize relevant published work, especially publications since the previous committee meeting that have significant impact on the student's research. The student presents experimental results, as well as other findings made during the semester. Emphasis in this discussion is placed on: (1) how the results affirm or are inconsistent with hypotheses that have been formulated by the student; and (2) the student's understanding of the scientific literature. The oral presentation concludes with a discussion of specific aims for the next report period. Each member of the Supervising Committee evaluates both the oral presentation and, when appropriate, the written progress report on one of the forms that is contained in Appendix V:A-D. It is the student's responsibility to provide the Committee members with the forms along with the progress report. The student collects and collates the forms after the meeting. The student provides a copy of the completed forms to each member of the Supervising Committee and the Graduate Advisor. The student also is responsible for bringing the form (Appendix V-E) summarizing the Committee members' evaluations to the meeting and having it completed and signed by each Committee member. The student submits the completed summary form to the Graduate Advisor.

The Graduate Advisor issues a grade of Satisfactory or Unsatisfactory in Scientific Writing, based on the majority opinion of the Supervising Committee. In the case of a tie grade, the grade given by the Supervising Professor prevails. If a grade of Unsatisfactory is due to a defect that can be easily corrected, the grade will be changed to satisfactory when the student makes the change to the satisfaction of the majority of the committee. If a student fails to complete a progress report and have a research committee meeting before the end of a semester or fails to submit a completed summary evaluation form, a grade of Unsatisfactory will be issued for both Research and Scientific Writing. A final grade of Unsatisfactory in Scientific Writing or in Research will result in the student being placed on academic probation. All students are required to maintain the following minimum academic standards:

1. At least a B in all biochemistry and IMGP courses.
2. At least a 3.0 GPA for all UTHSCSA graduate courses.

If a student gets a C or less in a biochemistry course or in a specific section of the INTD 5000 Fundamentals of Biomedical Science course, the student must remediate the section(s) or the course, depending on the final grade calculated for all sections. Remediation may consist of retaking the course or some other process (e.g., re-examination or writing a paper) designated by the course director. The student will be placed on academic probation until the less-than B grade is remediated. If the student fails to remediate to at least a B grade, the student will be subject to dismissal from the Ph.D. program. (If the student retakes a course, the original grade remains on the transcript, but only the grade from the repeat course is included in the GPA. If the student remediates by another process, the original grade is changed to the grade achieved by remediation.)

Any student receiving a second grade of C or less in a biochemistry course or in an IMGP course will be subject to dismissal from the Ph.D. program.

If a student gets a C or less in a course outside the Department of Biochemistry, the course may not be counted as a substitute for a biochemistry course and another biochemistry course will be required. If remediation is available for the course, the student may remediate for the purpose of maintaining a minimum GPA of 3.0.

An incomplete (I) grade will be issued when a student has not completed all the assignments or examinations before the conclusion of the course and when the course director has decided that there is a reasonable basis for the incompleteness. All work must be completed within one year, at which time the "I" grade will be changed to the appropriate letter grade. The course director will provide COGS with a brief description of the assignment to be completed and the time scheduled for completion to aid COGS in evaluation of the student.

e. Academic Probation

A student is placed on academic probation for failure to meet any of the requirements of the program. The Graduate Advisor notifies the student in writing the basis for the probation, the requirements to rectify the probation, and the time allowed to complete these requirements (usually one semester). A student on academic probation is not allowed to advance to candidacy. A student who fails to meet the probationary requirements, or who fails to satisfy a second requirement while on probation is subject to dismissal from the Ph.D. program. COGS may recommend to the Associate Dean of the Graduate School the dismissal of a student at any time for failure to make satisfactory progress. A majority vote of the members of COGS is required for a recommendation of dismissal.

2. Advancement to Candidacy

In order to advance to candidacy for the Ph.D., a student must: (a) complete all courses specified in section B.1.a, except for Contemporary Biochemistry Student Review; (b) pass the advancement to candidacy examination described below; (c) resolve any probationary requirements; and (d) obtain the Supervising Professor's certification of potential for productive and independent investigation.

a. Completion of Course Work

Students are required to successfully complete all the first and second year courses before taking the advancement to candidacy examination.

b. Advancement to Candidacy Exam: Oral Defense of a Research Proposal

The first attempt of an oral examination based on an original, written research proposal is to be completed by June 1 of the 2nd year for students who enter the program in August. (Refer to Appendix VI-A for detailed instructions on the preparation of this proposal and a description of the conduct of the examination.) Failure to meet this June 1 deadline will result in the student being placed on academic probation. The Examination Committee consists of a total of three members from the MBB track and the Department of Biochemistry plus one faculty member from outside the Department of Biochemistry. The Chair of the examination committee is appointed by agreement between three faculty members who comprise the Departmental Qualifying Examination Oversight Committee (DQEOC) for a given academic year. The members of the DQEOC are members of COGS who are appointed by the Department Chair. The purpose of the DQEOC is to provide every student examination committee with a Chair, to monitor the results of examinations of all students, and to assure an adequate degree of uniformity of examinations from student to student. The outside member cannot be a cross-appointed faculty member in the Department of Biochemistry.

In addition to the Chair, the other two members of each student's examination committee from the Department of Biochemistry are two faculty members chosen on the basis of their expertise to the area of the research proposed. The Supervising Professor is responsible for submitting the names of the proposed committee members, other than the Chair, to the DQEOC for approval. The student's Supervising Professor is present during the examination but does not participate and does not vote.

Scheduling of all activities relating to this examination is the responsibility of the student. The student should consult the chronology of events in Appendix VI-A and start the written proposal **well in advance of the deadline** to allow for possible revisions, possible remediation, and approval by the examination

committee. When the committee members approve the written proposal, they sign the Petition for Oral Examination form (Appendix VI-B). The student forwards the signed form and a copy of the proposal to the Graduate Advisor. At this time, the student schedules the oral examination, which must occur within two weeks of approval of the written proposal. If the student fails to obtain approval of the written proposal in time to meet the examination deadline, COGS will consider the exam to have been failed. Only in exceptional cases involving circumstances beyond the student's control will COGS consider granting a postponement.

If one of the Examination Committee members fails to appear for the oral exam, the chair of the committee may decide whether to proceed or postpone the exam. Either postponement of the exam by the committee, or absence of the committee chair is considered circumstances beyond the student's control.

All members of the Examination Committee complete the evaluation form provided in Appendix VI-A, section XIX. These forms are submitted to the DQEOC which makes the final pass/fail decision based on the content of the evaluation forms on or before June 7 for students entering in the Fall. Once the DQEOC has made its decision, they immediately submit the results to the Graduate Advisor on GSBS Form 32 (Appendix III). In case of failure, the student is allowed to repeat the examination with the same committee once. However, if the student is on probation for failure to complete the advancement to candidacy exam by the scheduled deadline and then fails the exam, COGS will decide if the student is allowed to repeat the examination or is subject to dismissal from the Ph.D. program. The chair of the examination committee gives the student a written explanation for the basis of the failure and provides guidelines to prepare for the re-examination. However, the re-examination will not be limited to the specific subjects or questions suggested by the committee as areas for improvement. All re-examinations or remediation efforts must be completed by July 15 for students entering in the Fall. Postponements can only be granted by petition to COGS and only for circumstances beyond the student's control. Failing the re-examination will be cause for dismissal from the Ph.D. program.

The student may petition COGS for admission to the Master's degree program.

c. Resolution of Probationary Requirements

A student may not advance to candidacy while on academic probation. Academic probation can be the result of unsatisfactory performance in course work, unsatisfactory grades issued by the Supervising Professor, or failure to complete program requirements on time, such as failure to take the advancement to

candidacy exam on time. Normally, the requirements to remediate an academic deficiency and the time period during which remediation is expected are stipulated when COGS places the student on probation. Upon receiving the result of the advancement to candidacy exam, COGS reviews the student's academic record for any outstanding remediation requirements. If COGS finds outstanding remediation requirements, the student is informed in writing including a specification of the time allowed to complete those requirements. This review occurs after either a pass or a failure of the advancement to candidacy exam. Failure to complete probationary requirements in the allotted time usually results in dismissal from the program.

d. Certification of Potential for Productive and Independent Investigation

Advancement to candidacy requires that the Supervising Professor certify that the student has potential for productive and independent investigation. Such certification may occur at the time of the advancement to candidacy exam by signing GSBS Form 32 (Appendix III). Alternatively, the Supervising Professor may defer certification until the student demonstrates further progress in research. If the Supervising Professor declines to certify the potential of the student by the end of the semester, then an unsatisfactory (U) grade is entered on the student's record for scientific research, and the rules regarding academic probation and unsatisfactory grades apply.

e. Review of the Student's Graduate Record by COGS

Following successful completion of the advancement to candidacy examination, the Committee on Graduate Studies reviews the student's graduate record. If any conditions for advancement to candidacy are not met, the student must be notified in writing of the reasons, any conditions to be met for advancement to candidacy, and the time within which these conditions must be met. The notification will state both a date by which COGS will conduct another review of the student's record and any contingencies that might lead to the student's dismissal from the Ph.D. program. The COGS review will be completed within two weeks of the exam deadline each semester. The student will be allowed two weeks to submit a written appeal to the committee. The COGS review will include a determination of whether the student was given a fair opportunity to remediate any deficiencies. COGS may revise any remedial requirements that it feels have become impossible or irrelevant for reasons beyond the student's control. Similarly, after a failed attempt in the advancement to candidacy exam, COGS reviews the student's record as well as the conditions for re-examination provided by the chair of the exam committee. COGS notifies the student of any additional requirements for advancement to candidacy beyond passing the second attempt at the advancement of candidacy exam. If a student is

on probation, and has not completed the required remediation in the allotted time, COGS may recommend dismissal. When all conditions for advancement to candidacy are met, the Chair of COGS will approve of the advancement to candidacy and sign the Form 30.

f. Action by the Associate Dean of the Graduate School

Upon a favorable review by the Committee on Graduate Studies, the recommendation for admission to candidacy is forwarded to the Associate Dean of the Graduate School of Biomedical Sciences. Upon approval by the Associate Dean of the Graduate School, the student is admitted to candidacy.

3. Dissertation Research Proposal and Proposal Seminar

By November 1 of the fifth semester, the student submits a draft of a proposal for dissertation research to the Supervising Professor for review. The student presents a departmental seminar based on his/her dissertation research proposal early in the sixth semester (end of the third year). The student submits the research proposal to the Dissertation Supervising Committee (except for the external reviewer) one week prior to the seminar and meets with the Supervising Committee within three weeks after the seminar. However, it is strongly recommended that the meeting be held as soon after the seminar as possible. A meeting held immediately after the seminar would be ideal. The student submits the dissertation research proposal, revised if necessary, to the Dissertation Supervising Committee for approval prior to submission to COGS. The student submits the dissertation research proposal and the proposed final membership of the Dissertation Supervising Committee (Appendix III; GSBS Form 30) to the Graduate Advisor for approval by COGS no later than the end of the sixth semester. The dissertation research proposal is to be written according to the guidelines presented in Appendix VII.

If a student did not submit the specified documents to COGS by the end of the sixth semester, the student must have obtained the approval of COGS for a postponement. The student should submit a letter to the Graduate Advisor stating the reason for seeking the postponement and stating a proposed date for submission of the documents. The letter must be signed by all members of the proposed Dissertation Supervising Committee, except the external examiner, to indicate their agreement with the reason for seeking a postponement. The committee meeting after the dissertation research seminar serves as the student's committee meeting for the semester in which it occurs.

4. Dissertation Supervising Committee

a. Temporary, Ad hoc Committee:

A temporary, ad hoc Dissertation Research Supervising Committee is initially formed prior to the first written Progress Report, which occurs in the Fall of the second year (see section B.4, pp. 16). The membership of this committee must be approved by COGS. The ad hoc committee is comprised of the Supervising Professor, two members of the MBB Track, one of whom has a primary appointment in Biochemistry, and one other UTHSCSA faculty who is a member of an IMGP Track (the latter may, or may not be a MBB track member).

b. Permanent Dissertation Supervising Committee

The permanent Supervising Committee is formed at the time of the preparation and defense of the written dissertation proposal. The committee must consist of at least five persons who may or may not be identical to the ad hoc committee. A sixth member can be added if the student and supervising professor believe that it will be beneficial to the project. The composition of the committee will be as follows:

- c. The Supervising Professor, designated as Supervising Professor and chair of the Supervising Committee;
- d. Two members of the MBB Track, one of whom has a primary appointment in the Department of Biochemistry.
- e. One faculty member in an IMGP track and a member of the graduate faculty, but who does not have an appointment in the Department of Biochemistry (this member can be a member of the MBB track, but cannot be a cross-appointee in the Department of Biochemistry).
- f. One member, designated as the external reviewer, must be from outside the Health Science Center and must be an expert in the field of the proposed dissertation. The member will provide unbiased perspective and critique; therefore, active collaborators of the Supervising Professor should be excluded. A person that is a prospective postdoctoral mentor of the student should also be excluded.
- g. The names, with signatures, of the proposed Supervising Committee members, with the Supervising Professor as chair, shall be submitted on GSBS Form 30 along with a copy of the dissertation proposal to the Committee on Graduate Studies for approval. A biosketch of the external reviewer also must be submitted along with the Form 30 to COGS. After the Committee on Graduate Studies approves the dissertation research proposal and the membership of the Dissertation Supervising Committee, the Graduate Advisor

signs GSBS Form 30 and submits it to the Associate Dean of the Graduate School.

If a change in the membership of the Dissertation Supervising Committee is necessary, the change must be approved by the Committee on Graduate Studies. The student should submit a revised Form 30 to COGS stating the name of the deleted committee member, the proposed new committee member, and the reason for the proposed change. If the proposed change is approved by the Committee on Graduate Studies, the student will submit the revised and signed Form 30 to the Graduate Dean's office.

5. Dissertation

At least twice a year, according to the schedule stated in Section B.1.e., the student meets with the Dissertation Supervising Committee to report progress of the research. The committee evaluates the student's performance on the appropriate form (Evaluation by the Committee Members, Appendices V-A to V-D).

The role of the external reviewer is to evaluate the scientific merit of the completed dissertation and to participate in the Final Oral Examination. The external reviewer is not expected to participate in the semi-annual meetings of the Supervising Committee with the student. Transmission of progress reports by the student to the external reviewer is optional.

When the student seeks permission to stop experimental work and to write the dissertation, the student should submit a copy of the dissertation outline and data, in the form of figures and tables, to members of the Dissertation Supervising Committee as a progress report. Note that if this occurs in the Spring, these items are still required. The student will review the data at a committee meeting. The Dissertation Supervising Committee shall determine whether all experimental work has been completed and whether the data are of sufficient quality and quantity to constitute an acceptable dissertation. If permission is given to stop experimental work, the Dissertation Supervising Committee and student also will decide upon the format of the dissertation and submission deadlines. Each member of the Dissertation Supervising Committee will indicate in writing, in the comments section of the evaluation form, his or her permission for the student to stop performing experimental work and approval of the dissertation format. A majority of the Committee members must give permission to stop experimental work and approve the dissertation format. The Supervising Professor notifies the Graduate Advisor in writing that the student has been given formal permission to stop experimental work and to write the dissertation. The student then will begin the actual process of assembling the dissertation. The dissertation should include

original data and results for publication in peer-reviewed, scientific journals. The decision of whether the dissertation is written in the standard dissertation format, or chapter format as described in Appendix VIII is at the discretion of the Dissertation Supervising Committee. In any case, the dissertation draft must conform to the general guidelines of the Graduate School. The Supervising Professor must approve a draft of the complete dissertation before the student submits it to the other members of the Dissertation Supervising Committee. The Supervising Professor will signify to the other committee members that he/she has read the submitted draft by signing the title page of the dissertation draft. It is not permissible to submit a dissertation in partially completed sections to the Dissertation Supervising Committee. The Dissertation Supervising Committee is entitled to a three-week period to evaluate the complete dissertation and to determine if it is suitable for defense.

6. Final Oral Examination

When the Dissertation Supervising Committee judges the dissertation to be suitable for defense, the student submits a Request for Final Oral Examination (GSBS Form 40, Appendix III) to the Associate Dean of the Graduate School for approval of a date for the exam. Public announcement of the Final Oral Examination is made by the Associate Dean of the Graduate School. This Examination is conducted by the Dissertation Supervising Committee with the Supervising Professor as chair. All interested persons may attend the public defense and have the right to question the candidate. After the public defense, the Dissertation Supervising Committee meets with the candidate in executive session to administer an intensive and detailed oral defense of the dissertation. The Dissertation Supervising Committee members vote on the candidate's success or failure on the Final Oral Examination; more than one vote for failure signifies failure on the examination. The Dissertation Supervising Committee members also vote for approval or disapproval of the final version of the dissertation.

The members indicate their vote by signing the Report on Final Oral Examination form (GSBS Form 43, Appendix III). Should there be extensive revisions of the dissertation required by the Dissertation Supervising Committee, the Graduate Advisor will withhold submission of the Report on the Final Examination until the Supervising Professor and the student certify that all necessary changes in the dissertation have been accomplished. Each member of the Dissertation Supervising Committee will inform the Supervising Professor if they want to review the changes in the dissertation prior to the certification of the final draft. Thus, the student's graduation will be postponed pending completion of the dissertation and the signing of the final report.

The Supervising Professor submits the report of the Final Oral Examination to the Committee on Graduate Studies. If the student failed, the Dissertation Supervising Committee also submits a recommendation regarding remedial action; in such a case, the Committee on Graduate Studies decides on the recommendation or other action to be taken. If the student passes the examination, the Committee on Graduate Studies votes on whether to approve the recommendation by the Dissertation Supervising Committee for granting the degree. Upon favorable review by COGS, the Graduate Advisor forwards the Committee's recommendation to the Graduate Faculty Council. When the dissertation meets the approval of the Dissertation Supervising Committee, the student submits the dissertation approval page to the Office of the Graduate Dean for signature by the Dean. Approval of these recommendations by the Graduate Faculty Council is required before the degree is awarded.

7. Final Hours

If a student has submitted their written dissertation to their committee for approval, they may qualify to register for final hours. In this case the student is exempt from the minimum tuition requirements (nine in the Fall and Spring and six in the Summer) and pays tuition based on the number of credit hours for which he or she registers. Such registration shall be considered a full-time course load. The minimum number of final credit hours for Ph.D. degree students is three; the minimum number for M.S. degree students is one. A student may register for final credit hours only once. If a student registers for final credit hours and then does not graduate with his/her degree in that semester, the next semester the student is required to take the full nine or six credit hours depending on the semester in question. It is important to note that the student is not capable of registering for official final credit hours online. If the student wishes to register for final credit hours the COGS Chair must be informed and the Registrar's office will be notified accordingly. If an International Student fails to contact the COGS chair and signs up for only three hours thinking this is sufficient action for final credit hours, his/her visa status may be affected.

E. FINANCIAL SUPPORT

Students in the IMGP are supported by the Graduate School of Biomedical Sciences during the first year of their studies. After the first year, the Supervising Professor is expected to provide support for the graduate student through research grants. Although no guarantee of financial support can be made to students enrolled in the Molecular Biophysics and Biochemistry Track, every effort will be made to aid the student

financially. For M.S.-degree students enrolled in the Biochemistry Graduate Program, the Supervising Professor may or may not provide financial support.

F. GRADUATE STUDENT PERSONAL LEAVE POLICY

The policy of the Graduate Program in Biochemistry and the Department on personal leave for graduate students is as follows: Owing to the unique relationship between a graduate student's responsibilities as a full-time student and as a half-time employee of the University of Texas, students will be allowed all official UTHSCSA employee holidays. Granting of additional leave time will be the responsibility of the Graduate Advisor for students until they have a Supervising Professor and by their Supervising Professor for the remainder of their program. An extended, formal leave of absence requested for any reason will be handled on a case-by-case basis by COGS prior to making a recommendation to the Dean of the Graduate School.

G. MISCONDUCT

The graduate program in Biochemistry adheres to the Procedures and Regulations Governing Student Conduct and Discipline as stated in the UTHSCSA Student Guide.

APPENDICES

APPENDIX I

Members of the Committee on Graduate Studies (COGS)

Chair and members of the Committee on Graduate Studies are appointed by the Chair of the Department of Biochemistry. The committee also has one graduate student member who is elected by the students in the Biochemistry Graduate program. The Chair of this committee serves as the academic advisor for all students in the Biochemistry graduate program.

APPENDIX II

Graduate Faculty Members of the Molecular Biophysics and Biochemistry Track

- Martin L. Adamo, Professor of Biochemistry; Ph.D., University of Houston, 1986. Research interests: Regulation of insulin-like growth factor-I biosynthesis and signaling in conditions of normal and pathological growth.
- Reto Asmis, Professor of Biochemistry; Ph.D., University of Fribourg, Switzerland, 1989. Research interests: Role of thiol Antioxidant Systems in Macrophage Dysfunction Associated with Cardiovascular Disease and Diabetic Complications
- Ricardo T. Aguiar, Department of Medicine, Assistant Professor (Cross appointment in Biochemistry); M.D. Federal University Paraiba, Brazil, 1987; Ph.D., Univ. of Sao Paulo, Brazil, 1994. Research interests: Molecular pathogenesis of hematological malignancies: basis for the rational design of targeted therapeutics; Intersection of the cAMP signals with survival pathways in normal and malignant B-lymphocytes.
- Robert Brenner, Department of Physiology Associate Professor; Ph.D., University of Texas at Austin, 1997. Research interests: Large conductance (BK-type) calcium-activated potassium channels that are gated to open by micromolar calcium concentrations and voltage.
- Borries Demeler, Department of Biochemistry, Associate Professor; Ph.D., Oregon State University, 1992. Research interests: Development, testing and implementation of user-friendly analysis software tools for the hydrodynamic modeling of biological macromolecules. Integration of multiple biophysical techniques for global analysis of complex systems.
- Paul F. Fitzpatrick, Professor of Biochemistry; Ph.D. University of Michigan. 1981. Research interests: Catalytic and regulatory mechanisms of enzymes with focus on two classes of enzymes, the tetrahydropterin-dependent aromatic amino acid hydroxylases and the flavoprotein oxidases.
- Franco Folli, Professor of Medicine; M.D. Universita di Milano, 1990, Ph.D. Universita di Milano e Padova, 1996, Research interests: Regulation of protein expression in diabetes mellitus and associated disease states, tyrosine kinases and mechanisms of intracellular signal transduction, biology of regulated secretion in the endocrine pancreas and central nervous system, pathogenesis of insulin-dependent diabetes mellitus (T1DM) and Stiff-man syndrome, mechanisms of insulin action and resistance, pathogenesis of non-insulin-dependent diabetes mellitus (T2DM)
- Maria Gaczynska, Department of Molecular Medicine, Associate Professor; Ph.D., University of Lodz, Poland, 1989. Research interests: The role of the proteasome, a multifunctional macromolecular assembly, in cell cycle progression, signal transduction pathways, immune response and general "housekeeping" in the human cell to better understand its role in cancer and aging.
- Stephen C. Hardies, Department of Biochemistry, Associate Professor; Ph.D., University of Wisconsin, Madison, 1979. Molecular genetics of a mammalian transposon; genome mapping.
- P. John Hart, Professor of Biochemistry; Ph.D., University of Texas at Austin, 1993. Research interests: Metalloprotein structure, action, and redesign; role of copper-zinc superoxide dismutase in Lou Gehrig's disease, structural biology of metal trafficking; blue copper proteins; protein crystallography.
- Andrew P. Hinck, Professor of Biochemistry; Ph.D., University of Wisconsin, 1993. Research interests: Solution NMR spectroscopy of proteins and nucleic acids; transforming growth factor β and its interaction with the ligand binding domain of the TFG- β type I and type II receptors; protein-RNA interactions.
- Dmitri Ivanov, Department of Biochemistry, Assistant Professor- CPRIT Scholar in Cancer Research; Ph.D., Brandeis University, 2001. Research interests: Solution NMR spectroscopy to probe how physical interactions at protein interfaces determine biological outcomes with particularly emphasis in the assembly of higher-order macromolecular structures such as viral shells or multi-subunit cellular machines.
- Jean X. Jiang, Professor of Biochemistry; Ph.D., State University of New York at Stony Brook, 1991. Research interests: Gap junction mediated cell-to-cell communication and intercellular signaling mechanisms.
- Chongwoo A. Kim, Department of Biochemistry, Assistant Professor; Ph.D. Johns Hopkins University, 1996. Research interests: Structure- function of polycomb group proteins.

- Eileen Lafer, Professor of Biochemistry; Ph.D., Tufts University, 1983. Research interests: The basic biology of the synapse and basic mechanisms underlying neurotransmission.
- John C. Lee, Professor of Biochemistry; Ph.D., Purdue University, 1966. Research interests: Structure, function, and regulation of assembly RNA-protein complexes; regulation of eukaryotic gene expression by peptide growth factors.
- Merry Lindsey Department of Medicine, Associate Professor; Ph.D. Baylor College of Medicine, 1999.
Research Interests: cardiovascular-oriented research that involves developing multidimensional approaches to examine the mechanisms whereby the left ventricle responds to injury and applying the knowledge gained to develop therapeutic strategies to prevent, slow, or reverse the progression to heart failure
- Feng Liu, Professor of Pharmacology (Cross appointment in Biochemistry); Ph.D., Iowa State University, 1990.
Research interests: Receptor tyrosine kinase signal transduction and regulation. Structure and function studies of protein kinases and signaling molecules.
- Richard F. Ludueña, Professor of Biochemistry; Ph.D., Stanford University, 1973. Research interests: Structure of tubulin; biochemistry of microtubules; tubulin isotypes.
- Bettie Sue Siler Masters, Professor of Biochemistry and The Robert A. Welch Foundation Professor in Chemistry; Ph.D., Duke University, 1963. Research interests: Structure-function studies of FAD- and FMN-containing enzymes, specifically NADPH-cytochrome P450 reductase and the three isoforms of nitric oxide synthase: neuronal, endothelial, and inducible. The studies include various biophysical techniques, including rapid reaction kinetics, EPR, ENDOR, NMR, and x-ray crystallography.
- Lee McAlister-Henn, Professor and Deputy Chair; Ph.D., The University of Texas Southwestern Medical Center, 1980. Research interests: Molecular genetic analysis of central metabolic pathways in eukaryotic cells.
- Nicolas Musi, Associate Professor of Medicine and Director of Center for Healthy Aging; M.D. Universidad Anahuac Mexico City, 1995. Research interests: Molecular mechanisms of insulin action and insulin resistance in skeletal muscle.
- Bruce J. Nicholson, Chair and Professor of Biochemistry; Ph.D. California Institute of Technology, 1983.
Research interests: Structure and function of gap junctions; connexins; gap junctions as tumor suppressors.
- Merle S. Olson, Professor Emeritus; Ph.D., University of Minnesota, 1966. Research interests: Inter- and intracellular signaling mechanisms; mechanisms of action of lipid and peptide mediators.
- Shane Rea, Assistant Professor Physiology; Ph.D., University of Queensland, 2000. Research Interests: To understand the causes of human aging at a molecular genetic level using the *C. elegans* as a model system.
- Neal C. Robinson, Professor of Biochemistry; Ph.D., University of Washington, 1971.
Research interests: Structure and function of mitochondrial electron transport complexes and the role of phospholipids in stabilizing their structures.
- Philip Serwer, Professor of Biochemistry; Ph.D., Harvard, 1973. Research interests: Genetics of the assembly of multimolecular particles (bacteriophages); dynamics of DNA conformation; fluorescence microscopy of single event-metabolism.
- Mark Shapiro, Department of Physiology, Associate Professor; Ph.D., Rush University Medical Center, 1991.
Research interests: Physiology and regulation of ion channels of excitable cells.
- Yuzuru Shiio, Department of Biochemistry, Assistant Professor; M.D. University of Tokyo, 1989, Ph.D. University of Tokyo, 1993. Research interests: Quantitative Proteomic Analysis of Proteins Important in Cancer.
- Rui J. Sousa, Professor of Biochemistry; Ph.D., University of Pittsburgh, 1991. Research interests: Structures and mechanisms of nucleic acid polymerases.
- Bjorn Steffensen, Professor of Periodontics (Cross appointment in Biochemistry); Ph.D., University of British Columbia, 1997. Research interests: Molecular and structural basis for interactions of matrix metalloproteinases and extracellular matrix molecules in health and disease.
- James Stockand, Professor of Physiology; Ph.D., Univ. of Texas Health Science Center at Houston, 1996.
Research interests: The use of contemporary methodologies, including electrophysiology, molecular biology, biochemistry, genomics and proteomics, and fluorescence microscopy to investigate regulation of ENaC and aldosterone signaling.

Manjeri A. Venkatachalam, Professor of Pathology (Cross appointment in Biochemistry); M.B., B.S., Calcutta Medical College and Calcutta University, 1962. Research interests: Molecular pathology of cell death; acute renal failure; glomerular structure and function.

Susan T. Weintraub, Professor of Biochemistry; Ph.D., The University of Texas Health Science Center at San Antonio, 1979. Research interests: Structure, elucidation and quantification of natural and synthetic compounds of biological interest, in particular, phospholipids, peptides, proteins, transition metal complexes and anti-inflammatory agents derived from plants.

David Weiss, Department of Physiology, Dean GSGMS; Ph.D., Baylor College of Medicine, 1987. Research interests: Understanding how GABA receptors function, e.g., how GABA binding results in opening of the chloride-selective pore, the mechanism by which allosteric compounds alter channel function, and how the GABAergic neuron regulates the number of postsynaptic GABA receptors on the cell surface.

Zhi-Min Yuan, Professor of Dental Diagnostic Science (Cross appointment in Biochemistry); M.D., Jiangxi Medical College (China) 1982, Ph.D. University of Maryland 1993. Research interests: signaling mechanisms that regulate cellular response to stress, examining how stress is converted into intracellular signals that control cell behavior, and investigating how cell behavior and stress response can be modulated by the tissue microenvironment.

APPENDIX III

Official Forms of The Graduate School of Biomedical Sciences

All are Available at:

<http://gsbs.uthscsa.edu/main/currentstudents/currentstudentresources.asp>

- FORM 30 - Dissertation Proposal Committee Approval
- FORM 31 - MS Admission To Candidacy
- FORM 32 - PhD Admission To Candidacy
- FORM 40 - Request For Final Defense
- FORM 41 - MS Report On Final Oral
- FORM 42 - MS Composition Of Supervising Committee
- FORM 43 - PhD Report On Final Oral

APPENDIX IV

Guidelines for Preparation of Research Progress Reports:

- a. Title Page
- b. Abstract (200 words or less)
- c. Introduction with a brief background including a statement of hypothesis, where appropriate, and specific aims for this time period
- d. Results, including methodology
Data should be included in the form of figures and tables with appropriate legends and footnotes.
- e. Discussion with conclusions
- f. References in dissertation style format
- g. Publication/manuscripts
- h. Specific aims for the next time period.

The progress report should be sufficiently thorough to permit evaluation of progress but not too lengthy. The student should pay particular attention to stating hypotheses and whether the experiments described constitute tests of the hypotheses. It is suggested that the report should be 5-10 double spaced typewritten pages. The report will be distributed to members of the Supervising Committee a week before the meeting.

APPENDIX V-B*Evaluation by the Committee Members***Third Year Student**

Student Name:

Month/Year Started Program:

Date of Meeting:

Has preliminary exam been taken?

Has dissertation proposal been approved?

Student should fill out this section.

 Committee Member: *Please circle or comment on issues that particularly need improvement.*

Was the progress report distributed a week before the meeting?

Was the written progress report thorough and understandable?

Was the oral presentation thorough and understandable?

Does the student have command of the literature?

Can the student draw on relevant information from class work?

Have at least some experiments been done thoroughly and finished?

Does the dissertation project and its associated experiments appear to be well thought out?

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:**
Overall evaluation of research progress (*Please circle*):**U** Unsatisfactory**P** Progress demonstrated, but not up to expectation for a student at this point in the program.**S** Satisfactory for this point in the program**E** Excellent

Scientific writing grade: Satisfactory Unsatisfactory

_____ Grade to be issued after another meeting this semester.

_____ Grade to be issued after the student rewrites specific aims for next period.

APPENDIX V-C

Evaluation by the Committee Members

Fourth Year Student

Student Name:

Month/Year Started Program:

Date of Meeting:

Has preliminary exam been taken?

Has dissertation proposal been approved?

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

Contribute to writing a paper or review? _____

Authored his/her own paper? _____

Student should fill out this section.

Committee Member: *Please circle or comment on issues that particularly need improvement.*

Was the progress report distributed a week before the meeting?

Were the written and oral presentations 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?

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

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

Additional comments:

Committee Member **Name:**

Overall evaluation of research progress (*Please circle*):

U Unsatisfactory

P Progress demonstrated, but not up to expectation for a student at this point in the program.

S Satisfactory for this point in the program

E Excellent

Scientific writing grade: Satisfactory Unsatisfactory

_____ Grade to be issued after another meeting this semester.

_____ Grade to be issued after the student rewrites specific aims for next period.

APPENDIX V-D

Evaluation by the Committee Members

Fifth Year Student and Beyond

Student Name:

Month/Year Started Program:

Date of Meeting:

Has preliminary exam been taken?

Has dissertation proposal been approved?

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

Contribute to writing a paper or review? _____

Authored his/her own paper? _____

Target date for graduation? _____

Student should fill out this section.

Committee Member: *Please circle or comment on issues that particularly need improvement.*

Was the progress report distributed a week before the meeting?

Were the written and oral presentations 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 dept 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**:

Overall evaluation of research progress (*Please circle*):

U Unsatisfactory

P Progress demonstrated, but not up to expectation for a student at this point in the program.

S Satisfactory for this point in the program

E Excellent

Scientific writing grade: Satisfactory Unsatisfactory

_____ Grade to be issued after another meeting this semester.

_____ Grade to be issued after the student rewrites specific aims for next period.

APPENDIX V-E

Date: _____

Summary of Faculty Evaluation of Student's Progress Report and Committee Meeting

Student: _____

Supervising Professor: _____

Committee Member: Print _____ Signature _____

Overall Evaluation of research progress (*Please circle*):

- U** Unsatisfactory
- P** Progress demonstrated, but not up to expectation for a student at this point in the program.
- S** Satisfactory for this point in the program
- E** Excellent

Scientific writing grade:

- _____ Satisfactory
- _____ Unsatisfactory
- _____ Grade to be issued after another meeting this semester.
- _____ Grade to be issued after the student rewrites specific aims for next period.

Committee Member: Print _____ Signature _____

Overall Evaluation of research progress (*Please circle*):

- U** Unsatisfactory
- P** Progress demonstrated, but not up to expectation for a student at this point in the program.
- S** Satisfactory for this point in the program
- E** Excellent

Scientific writing grade:

- _____ Satisfactory
- _____ Unsatisfactory
- _____ Grade to be issued after another meeting this semester.
- _____ Grade to be issued after the student rewrites specific aims for next period.

Committee Member: Print _____ Signature _____

Overall Evaluation of research progress (*Please circle*):

- U** Unsatisfactory
- P** Progress demonstrated, but not up to expectation for a student at this point in the program.
- S** Satisfactory for this point in the program
- E** Excellent

Scientific writing grade:

- _____ Satisfactory
- _____ Unsatisfactory
- _____ Grade to be issued after another meeting this semester.
- _____ Grade to be issued after the student rewrites specific aims for next period.

Use a continuation page if necessary.

APPENDIX VI-A

GUIDELINES FOR ADVANCEMENT TO CANDIDACY FOR THE Ph. D. DEGREE

I. Chronology of Events

The oral examination based on a written research proposal is to be completed by July 15 of the 2nd year for students who enter the program in August or by November 15 of the 2nd year for students who enter the program in January. Since several revisions may be required, the student is strongly advised to start several months before the deadline. The chronology of events is as follows:

1. The student decides upon the general topic of a proposal and discusses it with the Supervising Professor in terms of general feasibility and potential faculty members for the examination committee. The topic of the proposal must be distinct from any research being conducted in the student's laboratory. For example, a member of a laboratory specializing in protein crystallography should not propose to undertake the crystallographic determination of a new protein. The Supervising Professor and the student also decide which two faculty members from the Department of Biochemistry and which one faculty member from outside of Biochemistry they feel would have sufficient expertise in order to serve as examiners. Each of these individuals should be contacted by the Supervising Professor to be certain of their willingness to serve.
2. It is strongly recommended that the student submits an abstract (maximum of 200 words), a one-page outline, and the names of potential committee members to the Departmental Qualifying Examination Oversight Committee (DQEOC, a subcommittee of COGS) by January 15 for students entering in the Fall and by May 15 for students entering in the Spring. The hypotheses and specific aims should be apparent from these two documents. The Departmental Qualifying Examination Oversight Committee selects one of its members to be Chair, approves the other committee members, and submits this list to the COGS Chair, who subsequently notifies them of their appointments, and the student distributes the abstract and outline to his/her examination committee.
3. The student consults with the chair of the committee about the committee's evaluation of the abstract, and outline after one week. The chair either advises the student to write a full proposal, or advises the student that the topic or specific aims do not form an adequate basis for a proposal. In the latter case, the student may submit a different abstract and outline for consideration. The preparation of an acceptable proposal is the responsibility of the student.
4. Upon being advised to proceed, the student writes the full proposal taking into consideration any initial concerns of the committee members.
5. The student distributes the full proposal to the committee members. It is strongly recommended that this occur by March 1 for students entering in the Fall. The committee members inform the chair of the committee whether or not the proposal is approved for defense. The student consults with the chair

after fourteen days. If the proposal is not approved, the student re-writes the proposal on a new topic or a modification of the original topic based on requirements of the committee. A proposal may be defensible, i.e., based on a testable hypothesis, but still be deficient (e.g., in experimental design or in scientific writing) such that a re-write is required. The student (not the committee) is responsible for an acceptable proposal. If serious flaws persist in the re-written proposal, the committee may "approve" the proposal for oral exam, and then question the student on the deficiencies in the oral examination. Thus "approval" of the proposal does not guarantee that its content will be sufficient to pass the exam.

6. When the committee members approve the written proposal, they sign the Petition for Oral Examination Form (Appendix VI-B). It is strongly recommended that the written proposal be approved by April 1 for students entering in the Fall and by August 1 for students entering in the Spring. The student forwards the signed form and a copy of the proposal to the Graduate Advisor. At this time, the student schedules the oral examination. The oral examination must be scheduled to occur within two weeks of the approval of the written proposal. The recommended completion date for the Oral examination is April 21 for students entering in the Fall and August 21 for students entering in the Spring. The Oral examination must be completed by June 1 for students entering in the Fall and by October 1 for students entering in the Spring to avoid a failing grade. The student may consult with committee members about the material to be covered in the examination.
7. The oral examination is conducted. The oral examination will include questions on the proposal and may include questions on the student's course work. The Supervising Professor may not ask questions during the examination and may not vote on the outcome.
8. Members of the Examination Committee will use the approved form (see Section VIX below) to evaluate the student and rank both the quality of performance in specific areas and provide elaborating comments as needed. A recommendation of "pass" requires that the student perform at the level of "good" or better in two of the three broad areas specified on the evaluation form and not be ranked "poor" in any one area. These forms will be submitted to the DQEOC, a subcommittee of COGS, for final approval. Both the written proposal and oral examination require formal approval by the deadline stated at the beginning of these guidelines. Advancement to candidacy also requires approval of the Supervising Professor who judges the student's potential for independent and productive research. Signatures of the committee members and the Supervising Professor are required on the Petition for Admission to Candidacy Form (GSBS Form 32, Appendix III).

The student will be allowed to repeat the examination with the same committee one time if the student fails. The chair of the committee shall confer with the committee, the Graduate Advisor, and the Supervising Professor to construct requirements for the re-examination. They should agree on some format for a re-examination designed to give the student practice in those areas in which the student is deficient. The format may be a written follow-up only with no oral exam, a repeat oral examination with no further writing, or both a re-write and a repeat oral examination. However, the re-examination will not be limited to specific subjects or questions suggested by the committee as areas for improvement. Within one week the chair of the

committee will give the student and graduate advisor a written explanation for the basis of the failure and provide guidelines to prepare for the re-examination. Unless there are unusual circumstances, the re-examination must be completed by July 15 for students entering in the Fall and by November 15 for students entering in the Spring. If the student fails the re-examination, the student will be subject to dismissal from the Ph. D. program. If a student is dismissed for failure to pass the Advancement to Candidacy Examination, the student may petition COGS for admission to the Master's degree program.

9. Upon completion of the advancement to candidacy examination and receipt of GSBS Form 32 from the examination committee, the COGS Chair will decide whether to recommend to the Associate Dean of the Graduate School that the student be admitted to candidacy for the Ph. D. degree. The Associate Dean makes the final decision on admission to candidacy for the Ph. D. degree.

Time Line for Advancement to Candidacy Exam for Students Entering in the Fall:

- 1) Abstract by January 15 (Recommended)
- 2) One week for Departmental Qualifying Examination Oversight Committee to approve
or disapprove abstract/outline and Examination Committee composition and for the
Examination Committee itself to approve abstract/outline
- 3) Three weeks (or more) to write full proposal
- 4) Initial written proposal by March 1 (Recommended)
- 5) Two weeks for committee to approve or disapprove proposal
- 6) Two weeks (or more) to re-write proposal if necessary
- 7) Final proposal by April 1 (Recommended)
- 8) One week for committee to approve or disapprove final proposal
- 9) Oral Exam must be scheduled within two weeks of final proposal approval
- 10) Oral exam to be completed by April 21 (Recommended)
- 11) Initial oral exam is required to be completed by June 1
- 12) Re-examination or remediation is required to be completed by July 15.

II. Responsibilities of the student

1. To discuss your ideas about a proposal and potential faculty members for an examination committee with your Supervising Professor.
2. To write an abstract and outline of a proposal for initial approval by the Departmental Qualifying Examination Oversight Committee. The student is advised to obtain an opinion from the Supervising Professor before distributing the documents to the committee. The Supervising Professor should not discuss specific deficiencies in the proposal, but may advise the student if the document is not ready for distribution. The Supervising Professor's approval is optional, but recommended.
3. To write a complete, original proposal that is approved by the Examination Committee.
4. To present a copy of the proposal with a signed Petition for Oral Examination form to the Graduate Advisor when the committee has approved the proposal and to inform the Graduate Advisor of the date of the oral examination.
5. To successfully defend the proposal in an oral examination by the committee.

6. To make sufficient progress in research to convince your Supervising Professor that you have potential for productive and independent research.
7. To schedule the time and place of all meetings with committee members, and to provide committee members with written notification of all meetings.
8. The preparation of the written proposal and study for the oral examination should not interfere with the student's responsibilities for research and classroom studies. Each student should consult the Supervising Professor concerning commitment of time.

III. Responsibilities of the Supervising Professor

1. To provide your student general guidance in preparation of the proposal. The Supervising Professor may suggest changes with respect to general organization of the document, English (grammar, spelling, etc.), and general aspects of the science. The Supervising Professor should not comment on the detailed scientific matters of the proposal. It is the responsibility of the examination committee to evaluate the scientific merits of the proposal. However, the Supervising Professor should advise the student if the proposal is generally not ready for distribution (i.e., not thorough, not well researched, not generally accurate, etc.).
2. To contact potential members of the Examination Committee to determine if they are willing to serve, and to submit names of the potential members to the Departmental Qualifying Examination Oversight Committee.
3. To attend the oral examination as a non-participating, non-voting member of the Examination Committee.
4. To participate in evaluating the student for advancement to Ph. D. candidacy based on the student's potential for independent and productive research. You do not have to sign by the same deadline at completion of the oral exam. It is your prerogative to withhold your signature from GSBS Form 32 until you can make this evaluation. Your signature is required on this form for your student to advance to Ph. D. candidacy. Failure to sign the form by the end of the semester will be taken as an unsatisfactory grade in Research (BIOC 6097).

IV. Responsibilities of the Departmental Qualifying Examination Oversight Committee (DQEOC)

1. The DQEOC shall read the abstracts and outlines of all students who are taking the advancement to candidacy examination. The DQEOC shall use these documents to assure that the proposed research is distinct from any research being conducted in the student's laboratory and to appoint from among their members a Chair for each examination committee and to approve other proposed members of the examination committee. The DQEOC will also meet to review the results of each examination (pass/fail), and otherwise monitor the examinations of all the students.

V. Responsibilities of the Student Qualifying Examination Committee

1. The examination committee is composed of three members from the faculty of the Department of Biochemistry and one faculty member from another department in the UT Health Science Center. The latter may not have a cross-appointment in the Department of Biochemistry. The committee will be approved by the DQEOC, who will appoint one of their members Chair of each examination committee.

2. The committee determines the initial feasibility of the proposal based on the student's abstract and outline. The Chair solicits the opinions of the committee members within one week of receipt of the abstract and outline. The Chair informs the student of the committee's evaluation within this timeframe. If the committee rejects the topic or specific aims, they should be prepared to evaluate a resubmitted abstract and outline. The student is responsible for preparing an acceptable proposal.
3. The committee determines if the complete written proposal provides a reasonable basis for an oral examination. The Chair informs the student of the committee's decision within fourteen days after receipt of the written proposal by the committee members. If the committee does not approve the proposal or decides that it should be improved, the student must re-write the proposal based on recommendations from each member of the committee. Committee members may consult individually with the student, but the committee chair should take care that the student is not dealing with conflicting demands. The committee chair should ensure the student understands that requests from committee members supersede all guidelines for format or page length. The chair should try to bring this phase of the exam to a close after one re-write, although individual committee members may interact further if they wish. If weaknesses persist through the second re-write, the chair should ensure the student understands that the examination may cover the weak points.
4. When the committee agrees to conduct the oral exam, they will sign the Petition for Oral Examination (see I. 7 above).
5. The committee examines the student on the written proposal and related areas of biochemistry, including coursework. The chair of the committee acts as a moderator for the examination. In the case where one committee member is absent, the chair decides whether or not to proceed with the examination or grant a postponement.
6. Each member of the committee completes the evaluation form found in Section IX below. Passage of the exam required fulfillment of the requirements listed on the form. The chair of the committee will inform the student of the committee's decision immediately after the committee's deliberations. If the performance is unsatisfactory, the chair tells the student the reasons for the failure and specifies what aspects of the performance must be improved in a second exam. This may or may not include a rewrite of the proposal, or even a switch in the topic. Advancement to Ph. D. candidacy also requires approval of the Supervising Professor. Details about passage/failure of the exam are described above in section I. 9. The chair of the committee is responsible for preparing a copy of GSBS Form 32 and bringing it to the oral exam.
7. The chair of the committee will inform the Graduate Advisor of the committee's decision and give him the signed GSBS Form 32. The Chair of the committee shall also report on the results of the examination to the Departmental Qualifying Examination Oversight Committee.

VI. Responsibilities of the Department Chair

1. The Department Chair shall appoint the three members of COGS to be members of the DQEOC.

VII. Responsibilities of COGS

The responsibilities of COGS are stated above in I. 10.

VIII. The Student's Written Proposal

The faculty strongly emphasizes that the responsibility for the quality of the proposal in terms of originality, approach to solving the problem or testing the hypotheses, and significance rests completely with the student. The student may give an original interpretation or a re-interpretation of literature data; propose a series of experiments to test a hypothesis; or present a new theoretical approach to a problem. The student should ask the Supervising Professor to read the proposal prior to submission to the examination committee (see III. 1 above).

The following are general guidelines for the preparation of the written proposal to be used as the basis of the oral examination for advancement to Ph. D. candidacy in Biochemistry. (These guidelines are based, in part, on instructions for preparation of a NIH grant.)

1. Topic

- a. The research proposal may be written in an area of biochemistry distinct from any research being conducted in the student's laboratory. For example, it is not appropriate for a student to propose extensive NMR studies if that student is already in a laboratory that specializes in NMR. The problem must demonstrate the student's capability to propose original approaches to solve a particular problem. During the exam, the student will be expected to demonstrate knowledge of the alternative methods/strategies that could have been chosen, and to be able to evaluate the relative merits of the alternatives.
- b. The student need not restrict the proposal to the dissertation area. The same constraints discussed above still apply. The chosen area must fall within aspects of biochemistry taught in our program.
- c. The examination committee will be the final arbiter of whether or not the chosen area is appropriate. The committee will inform the student if the topic is appropriate based on this abstract and outline (see 1.4 and II. 2 above).

2. Scope

- a. The proposal should test one or more hypotheses when appropriate. The experiments should cleanly support or reject the associated hypotheses. The experiments need not prove the hypothesis, but in the case where the results support the hypothesis, that support should significantly improve confidence in the hypothesis. It is not acceptable to propose experiments that will likely yield results that do not discriminate between the truth or fallacy of the hypothesis. It is not acceptable to list a hypothesis that one cannot imagine to be false. It is not acceptable to propose purely descriptive experiments (i.e., I'll do this and see what happens.).
- b. The proposal should be suitable for one person to execute in about two years of work. It should be about the scale of a dissertation proposal, or of a postdoctoral fellowship.
- c. The experiments proposed should be the logical next steps in some area, or should reinforce and extend recent advances in the area.

3. Format

- a. The total text should be no more than 10 double-spaced typed pages, accompanied by no more than 4 pages of figures and tables, and no more than 2 pages of references. No preliminary results are expected. The proposal should have a cover page with a title and names of the student, Supervising Professor, and committee members. Page one will be an abstract. A suggested breakdown for the rest of the text is:
 - page 2 - specific aims with hypotheses
 - pages 3-5 - background and significance
 - pages 6-10 - experimental design and methods
- b. Observe the margins indicated on the NIH continuation page. Number and place your name on all pages. The font should be 10 - 12 characters per inch if fixed spacing, or should average not more than 15 characters per inch if proportional spacing. The text should be double spaced. Figure legends may be single spaced to accommodate placing them on the same page as the figures. References should be cited from the text by author and year, and references may be single spaced. Figures and tables should be cited from the text by number.
- c. The student may exceed the page limits if directed by the examination committee to include additional information. All directions given by the exam committee supersede these guidelines. The exam committee is the final arbiter of an acceptable proposal.
- d. The proposal will not contain text that is extensively quoted or paraphrased from any other work. Figures may be copied or modified from other works with attribution. Figure legends may contain quoted or paraphrased material, but should be customized by the student to support the points of the proposal as much as possible. Any quoted material must be given proper attribution.

4. Content of Sections

- a. *Abstract* - The abstract should encapsulate the significance, aims, and key experimental approaches of the proposal. It should be 1/2 to 1 page long.
- b. *Specific Aims* - Break the plan into 2-4 specific steps. Each should be summarized in a single-numbered, explicit sentence associated with a short explanatory paragraph. At least one aim should be in the form: "Aim x -- To test [hypothesis] by [experimental strategy]." Multiple aims could test the same hypothesis by different approaches, or test different hypotheses with the same collection of data. Some aims may be preparatory (i.e., to prepare a mutant protein, or to establish the power of a method on some test material, or to clone a gene). However, all of the aims cannot be preparatory, since they do not test hypothesis.
- c. *Background and Significance* - Briefly sketch the background to the proposal, critically evaluate existing knowledge, and specifically identify gaps which the project is intended to fill. State concisely the importance of the research to longer term objectives. An exhaustive survey of the literature and a lengthy bibliography is not required as part of the written proposal, although the student will be expected to demonstrate a thorough understanding of the

relevant literature during the oral defense. In the written document, include only that information that defines what the problem is and argues that the proposed work should be done.

- d. *Experimental Design and Methods* - Discuss the experimental design and the procedures to be used to accomplish the specific aims of the project. Include the means by which the data will be analyzed and interpreted. Describe any new methodology and its advantage over existing methodologies. Discuss the potential difficulties and limitations of the proposed procedures and alternative approaches to achieve the aims. Experimental Design deals with issues like how many samples will be needed, what controls will be needed, and exactly what measurements will tell if the hypothesis is true/false, or that the aim has been completed. Experimental Design is best organized according to the aims. Methods deal with exactly how an experiment is to be carried out. Methods may be included within the Experimental Design section; however, since the same methods are often used in several aims, it is often more convenient to split Methods into a separate section. Do not include fine details for methods; rather give the name and purpose of the method, the reference you would follow, and a brief discussion of how you will deal with any aspect of the method that you feel is vulnerable to failure. Do not invent new methods unless this is an explicit aim of the proposal. During the oral exam, the student will be expected to demonstrate knowledge of the theory behind the methods.
- e. *Literature Cited* - For each citation, provide the names of all authors, the article title, the name of the book or journal, volume number, page numbers, and year of publication. Arrange in alphabetical order by first author. If you cite it, we expect you to have read it and understood it.

The committee may request inclusion of a recent MedLine, or the equivalent, literature search in addition to the cited literature.

- f. *Figures and Tables* - Figures should have a title and a legend. Tables should have a title and explanatory footnote. Figures and tables should be numbered as referenced from the text. Include attribution in the legend if a figure has been copied from elsewhere. Hand drawn diagrams are acceptable so long as they reproduce legibly. Figures may be annotated to make your point more clear.

VIII. The Oral Examination

The examination begins with a ten-minute presentation by the student that summarizes the proposal. The student should obtain approval from the chair of the committee to use slides, transparencies, or models other than previously presented in the written proposal, during the summary presentation or examination. The summary presentation is followed by questions from the committee members until they decide they can evaluate the student's performance. The written proposal and related scientific areas will be the bases for the committee's questions. The Supervising Professor is not allowed to ask (or answer) questions during the exam. A three-hour period should be scheduled for the examination.

IX. Criteria for Evaluation of the Advancement to Candidacy Exam

Form for Evaluation of the Advancement to Candidacy Exam

The committee should use the following form to evaluate the student and rank both the quality of performance in specific areas and provide elaborating comments as needed. A recommendation of 'pass' requires that the student perform at the level of 'good' or better in 2 of the following 3 broad areas, and to not be ranked 'poor' in any one area.

1. Basis of knowledge:

- a. Does the student possess sufficient knowledge in the area of the examination? Note that in the absence of remembering details, a perspective on what is known, where it might be found, and how it might be applied usefully to the problem at hand should be considered favorably as a basis of knowledge.

Outstanding [], Excellent [], Good [], Fair [], Poor []

Comments:

- b. Has the student researched the specific background of the proposal well enough to understand the overall theory governing the work in this area and does the student demonstrate knowledge of what has or has not already been published? Can the student state how unexpected results would affect the current theory?

Outstanding [], Excellent [], Good [], Fair [], Poor []

Comments:

- c. Does the student have an understanding of the theory underlying the specific methods proposed?

Outstanding [], Excellent [], Good [], Fair [], Poor []

Comments:

Overall performance: Outstanding [], Excellent [], Good [], Fair [], Poor []

2. Command of the scientific method:

- a. Can the student distinguish a hypothesis from a belief (a statement that the student cannot imagine being wrong)?

Outstanding [], Excellent [], Good [], Fair [], Poor []

Comments:

- b. Can the student recognize when an experiment clearly rejects or supports a hypothesis? Does the student appreciate the difference between a positive and negative result?

Outstanding [], Excellent [], Good [], Fair [], Poor []

Comments:

- c. Can the student correctly identify and deal with at least some of the vulnerabilities of the proposed methods? Does the student rely on controls to deal with experimental vulnerabilities? Note: recognizing that the best experiment that they can think of still has weaknesses should be evaluated favorably.

Outstanding [], Excellent [], Good [], Fair [], Poor []

Comments:

Overall performance: Outstanding [], Excellent [], Good [], Fair [], Poor []

3. Originality:

- a. Can the student demonstrate that personal choices of the experimental approach have been made by discussing the relative merits of alternative methods?

Outstanding [], Excellent [], Good [], Fair [], Poor []

Comments:

- b. Can the student discuss what future direction should be taken given some specified outcome of the proposed experiments?

Outstanding [], Excellent [], Good [], Fair [], Poor []

Comments:

Overall performance: Outstanding [], Excellent [], Good [], Fair [], Poor []

Evaluation of the process:

Based on your experiences in the examination of students in comparable processes, and on your expectations of the rigor of examination required to approve candidacy for a Ph.D., do you feel that this examination was both rigorous and fair to the student and comparable in these respects to equivalent examinations of other students?

Comments:

For the Supervising Professor:

Please characterize and comment on your impressions and expectations of the student's potential for creative, independent, scientific research:

Outstanding [], Excellent [], Good [], Fair [], Poor []

Comments:

APPENDIX VI-B

Department of Biochemistry

University of Texas Health Science Center at San Antonio

**Petition for Oral Examination for
Advancement to Ph. D. Candidacy**

Name of Student

Date

Approval of written examination (the written proposal)

Signatures of members of examination committee:

Chairman

Signatures of the committee members certify that the written proposal is satisfactory and student may take the oral examination for advancement to Ph. D. candidacy.

Please return the completed form to the graduate advisor.

APPENDIX VII

GUIDELINES FOR PREPARATION OF A DISSERTATION RESEARCH PROPOSAL

The format is similar to that required by most grant agencies, so in essence the student has the first opportunity to prepare a document that will resemble a research proposal. The maximum length of the proposal should be 10 single-spaced or 20 double-spaced typewritten pages (excluding title page, abstract, illustrations and references). The purpose of the page limitations is to help you learn to write succinctly in order to create a more readable document. The existence of page limits will not be accepted as an excuse for a less than thorough proposal. No part is to be extensively copied verbatim from any other source, including your own published work or your professor's grant proposal. Any quoted material must be given proper attribution. Although you are free to paraphrase your own published work, it is to your advantage to emphasize its relevance by citing it. You should append reprints of your own published work if it is relevant to the proposed topic. Number and place your name on all pages. The font should be 10 - 12 characters per inch if fixed spacing, or should average not more than 15 characters per inch if proportional spacing. Figure legends may be single-spaced to accommodate placing them on the same page as the figures. Any directions given by the supervising committee or by COGS supersede these guidelines.

- Page 1. Title Page - title; name of candidate; graduate program.
- Page 2. Abstract - summarize the objective, protocol, preliminary data and significance of your work in approximately 400 words or less.
- Pages 3-12. Research Plan - to be presented in the following order.
 - a. *Specific Aims* - State concisely the objectives of the proposal as a series of specific aims. If the aims can be described as all addressing one overreaching objective, then state that objective before listing the aims. As much as possible, state each aim as the test of a hypothesis. It is permissible to list some aims that you have essentially already completed. Try to avoid a serial structure for things that have not already been done (i.e., I'll do A, with the result of A; I'll do B, with the result of B; I'll do C - is asking for trouble unless A and B are already demonstrated by your preliminary results.) There should be enough information for the reader to tell in general how each aim will be resolved. This should take about 1 single-spaced page.
 - b. *Background and Significance* - Describe in about 3 single-spaced pages the work of others, citing only the most relevant references. You should provide the reader with a clear rationale for your research problem. Choose only those references that define what the problem is, argue that it should be done, and establish the feasibility of your approach(es). Prior work done by others in your laboratory that establishes feasibility can be described here. If you describe unpublished works of others, be sure to cite them for "personal communication" and be sure to obtain their permission. DO NOT

feel obligated to go back to the first paper on the subject published and proceed forward. This approach can be saved for your dissertation. Pay particular attention to what the resolution of your aims will allow us to ask or to do in the future that we can not do now.

- c. *Preliminary Results* - Describe results that you have generated that support the proposal. Only include results that demonstrate how you will satisfy the aims. Do not include failed experiments, abandoned projects, or work which is not directly relevant to completion of your aims. You may present much of the information in the form of illustrations (tables, charts, graphs, micrographs, or best of all -- reprints of your own published work) which are placed at the end of the document. However, the text should clearly define how far along each aim is towards completion. This is the section of the proposal which you will use to convince the reader not only that the aims you have selected are feasible, but that it is feasible for you to complete them. An ideal preliminary results section would be organized by aim, and demonstrate for each aim that you have already accomplished those parts most likely to have caused trouble and that all the required methods already work in your hands.
- d. *Experimental Design and Methods* - Discuss the experimental design and the procedures to be used to accomplish the specific aims of the project. Include the means by which the data will be analyzed and interpreted. Describe any new methodology and its advantage over existing methodologies. Discuss the potential difficulties and limitations of the proposed procedures and alternative approaches to achieve the aims. Experimental Design deals with issues like how many samples will be needed, what controls will be needed, and exactly what measurements will tell if the hypothesis is true/false, or that the aim has been completed. Experimental Design is best organized according to the aims.

Methods deal with exactly how an experiment is to be carried out. Methods may be included within the Experimental Design section; however, since the same methods are often used in several aims, it is often more convenient to split Methods into a separate section. Methods that have already been demonstrated in the preliminary results can be briefly addressed by stating any improvements that will be required to complete the project. Methods that have not yet been attempted require more documentation as to their suitability. It is more relevant to quote close precedents for the method resolving very similar problems than to quote recipes. Include a brief discussion of how you will deal with any aspect of the method that you feel is vulnerable to failure. Do not invent new methods unless this is an explicit aim of the proposal.

Page 13 - end

References - follow a well-established format such as the one presented in Index Medicus. Include titles of the references cited. Arrange the citations in either numerical or alphabetical order. If you choose the latter, number the citations consecutively since the references in the text are cited numerically. Use only standard-accepted abbreviations for the names of the journals. BE CONSISTENT in the way you

construct the citations. You may use numbers in the text when citing the literature references rather than names of authors if you wish. References do not count in the page limit, but should not run more than 3 single-spaced pages.

Illustrations- These are the tables, etc. that report your preliminary data in support of the proposal. Figures should have a title and a legend. Tables should have a title and explanatory footnotes. Include attribution in the legend if a figure has been copied from elsewhere. Hand drawn diagrams are acceptable so long as they reproduce legibly. Figures may be annotated to make your point more clear. Reprints of your own published work are highly recommended; however, you should not include reprints of other people's work unless requested by the committee. Illustrations do not count in the page limit, but do not include more than 10 items other than reprints.

APPENDIX VIII

GUIDELINES FOR PREPARATION AND SUBMISSION OF Ph. D. DISSERTATION IN CHAPTER FORMAT

For detailed instructions for the preparation and submission of dissertation, consult the Graduate School office. For the Biochemistry Department, an optional chapter format for writing the Ph. D. dissertation may be used if approved by COGS. The following paragraphs describe the guidelines for implementing such a format.

1. Text Organization

The recommended organization for the text of the Ph. D. dissertation written in the chapter format is the following:

Comprehensive Abstract
General Introduction
Literature Review
Chapters I, II, III, etc.
Overall Discussion
References

The general introduction and literature review can be written as a single section of the dissertation as currently outlined by the Graduate School.

2. Chapter Organization

Each chapter should be organized in the format of an article that would be published in a scientific journal as follows;

Title Page
Abstract (optional)
Introduction
Materials and Methods
Results
Discussion

The results and discussion section of each chapter can be combined in a single section entitled “Results and Discussion” as currently employed by some scientific journals.

3. Footnotes

If footnotes or acknowledgements are required, they should appear at the end of each chapter.

4. Papers That Have Been Published, Accepted for Publication, or Submitted

The following information must be given at the end of each chapter in the form of a footnote(s) for each paper that has been published, accepted for publication or submitted for publication, and should not appear on the chapter title page:

- a. The title of the article as it appears or will appear after publication.
- b. The complete and correct order of authors.
- c. The journal reference, i.e., volume, page, and date, if known, or journal to which the manuscript has been accepted or submitted.

Even though an article may have been published or accepted for publication, the graduate advisor and/or the graduate student supervising committee has the prerogative to request modifications of such a manuscript before inclusion as one of the chapters in the dissertation.

5. Appendix

If the graduate advisor and/or the graduate student supervising committee feels it is appropriate to include detailed methodology or preliminary experimental results in the dissertation that would normally not be found in a published article, it should be placed in an appendix section after the last chapter.

6. Writing Style

Reprints from published scientific journal articles CANNOT be used as chapters. Rather, these reprints must be re-typed in the writing style currently approved by the Graduate School, i.e., on approved paper with the proper spacing, margins, etc.

Figures and tables should be numbered with unique designations so they can be easily identified and located, e.g., consecutively throughout the entire dissertation or consecutively in each chapter with a chapter designation. In the latter case, figures could be numbered as 1.1, 1.2, 1.3, etc. and 2.1, 2.2, 2.3, etc. Tables can be numbered 1.I, 1.II, 1.III and 2.I, 2.II, and 2.III.

All references used in the dissertation should be cited in the same style throughout the text. All literature citations should be located in one section at the end of the text in a style currently approved by the Graduate School. This will eliminate the use of reference sections at the end of each chapter in an effort to reduce redundancies.

7. Quality of Dissertation Research

It is anticipated that both the quality and quantity of the data presented in the Ph. D. dissertation written in the optional chapter format will be the same as currently accepted by the Department of Biochemistry and the Graduate School. The only difference between the chapter style dissertation and the more traditional dissertation will be the format in which the data is organized and presented.

It is further anticipated that each chapter should clearly represent the work of the student. Any questions regarding the quality of the research presented in the dissertation, the relative contributions of the student, the supervising professor, or other individuals, to the total research and/or writing effort represented by the individual chapters present in the dissertation, what collection of experimental results is approved to constitute each chapter, as well as decisions concerning which students should be eligible to employ a chapter format in writing their dissertation should be the responsibility of the graduate student's supervising committee.

8. Steps for Approval

The Supervising Committee must approve the use of the chapter format. This decision requires that the student has authored multiple published or submitted manuscripts containing original research results and should also be based on the nature of the research project and the ease by which the data can be organized and presented in chapter format. The publication record and/or the anticipated submission of dissertation results for publication by the student should also be considered in determining if the chapter format is appropriate. The Supervising Professor must write a request to the Committee on Graduate Studies to approve use of the chapter format for the student's Ph. D. dissertation.

APPENDIX IX

BIOCHEMISTRY DOCTORAL PROGRAM

The University of Texas Health Science Center at San Antonio

COURSE REQUIREMENTS AND MILESTONES

First Semester

IMGP Curriculum

Second Semester

Finish IMGP Curriculum, including laboratory rotations
Quantitative Biochemistry (1), Macromolecular Structure & Mechanism (1)
and Integration of Metabolic Pathways (2);
or Quantitative Biochemistry (1), Molecular Biochemistry (2)
Ethics in Research (0.5)
Choose Research Advisor and IMGP Track
Advanced Courses*: Take 1, or 2 courses (2-4 units)

Summer Term Research (6): Dissertation research

Third Semester

Supervised Teaching (1): Participate in Dental, or Medical Biochemistry course
as a teaching assistant
Advanced Courses: Take 2 courses (4 units)
Research (3)
Scientific Writing (1)
Form temporary Dissertation Committee
Begin preparations for Advancement to Ph.D. Candidacy Examination

Fourth Semester

Advanced Courses*: Take 2 courses (4 units)
Research (1-4)
Write Research Proposal for Advancement to Candidacy Examination
and take oral exam

Summer Term

Research (6)
Advancement to Candidacy Examination. Oral must be attempted by June 1 and
completed by July 15.

Fifth Semester

Research (8)

Scientific Writing (1)

Submit a dissertation research proposal to the Supervising Professor by November 1. Form a dissertation Supervising Committee

Contemporary Biochemistry Student Review. This is attended by ALL third to fifth year students. During the third-fifth years, a student MUST have given one Review and must have attended those presented by other students. The student will not be allowed to graduate until the presentation requirement is met.

Sixth Semester

Research (8)

Dissertation Proposal must be completed by the end of this semester

Summer Term

Research (6)

Seventh Semester

Research (8)

Scientific Writing (1)

Eighth Semester and thereafter

Research (8): Dissertation research

Continue Contemporary Biochemistry Student Review sessions as required

Scientific Writing (1) in Fall semesters: Continue semi-annual interaction with Supervising Committee until dissertation research is completed.

Two semesters of "Dissertation" (required, taken after approval of the dissertation proposal).

Write and defend Ph. D. Dissertation

Legend

*Advanced Courses: Students are required to take Biophysical Methods in Biology, Molecular Biochemistry plus 8 units of advanced courses. The student can substitute an course from another IMGP Track for an Advanced Biochemistry courses if it is of equal or greater credit and if prior approval of the student's Supervising Professor and the Graduate Advisor is obtained.