



TEXAS TECH UNIVERSITY

HEALTH SCIENCES CENTER

Graduate School of Biomedical Sciences

Department of Cell Biology and

Biochemistry Graduate Programs™

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**M.S. PROGRAM IN  
BIOCHEMISTRY AND MOLECULAR GENETICS**

## I. INTRODUCTION

The Master of Science degree is an advanced degree conferred in recognition of proficiency in research, breadth and soundness of scholarship, and thoroughness of a specific field of knowledge. Beyond the minimum preparation required of all students, the period and course of study cannot be prescribed in advance, but will depend on the diligence and specific goals of the individual student.

The program of study leading to the M.S. degree in Biochemistry and Molecular Genetics consists of a didactic component and a research component that are pursued simultaneously. Most students will proceed through the program as follows: during the first fall semester the student will take the GSBS First Year Core Curriculum courses in Core I Molecules (GSBS 5471), Core II: Cells (GSBS 5372), Core III: Genes (GSBS 5373), Core IV: Biomedical Seminar Series (GSBS 5174), and Core V: Introduction to Biomedical Research (GSBS 5275). The students will also begin the process necessary to select a Supervising Professor in whose laboratory the thesis research will be conducted. During the second semester the students will complete the advanced course in Advanced Protein Biochemistry (GBMG 6333). By the end of the first year the typical student will have chosen a Supervising Professor and begun thesis research. In the succeeding two years the student will complete the required courses while continuing the research program. Upon satisfactory completion of course work requirements a student will be admitted to Candidacy for the Master of Science degree. The final requirement is presentation and public defense of a thesis based upon original research (see Section VIII).

The progress of each student through the program will be under the direction of a Supervising Professor and a series of faculty committees who represent the Faculty of the Program of Biochemistry and Molecular Genetics and the Graduate School of Biomedical Sciences. During their first year, students will be directed by the Graduate Program Committee. Later, each student will have a Master's Advisory Committee on which the Supervising Professor will serve as Chair. The Master's

Advisory Committee will be responsible for the student through the remainder of the student's degree program.

All students are expected to subscribe to an honor system which is implicit in accepting admission to the BMG M.S. Program. Each student shall be responsible for his/her conduct from the time of the application for admission through the actual awarding of a degree, even though conduct may occur before classes begin or after classes end, as well as during the academic year and during periods between terms of actual enrollment.

Ethical standards of conduct will be discussed with students upon entering the Biochemistry & Molecular Genetics M.S. program by the Graduate Program Advisor, presented to all GSBS students during orientation, present in every course syllabus, and is described in detail in the TTUHSC Student Affairs Handbook, Code of Professional and Academic Conduct which is available online. Evaluation of students ability to recognize ethical issues and behave in accordance with these ethical standards of conduct are based on their conduct in the laboratory: experimental data are not manipulated, laboratory notebooks reflect the results that were obtained, verification of experimental results by replication of experiments, proper allocation of credit for work done by others, respect for the rights of fellow lab workers.

## II. GOVERNANCE BODIES OF THE GRADUATE PROGRAM

A. The Graduate Program Committee exercises general supervision over the Graduate Program of Biochemistry and Molecular Genetics. This committee is made up of the Graduate Program Advisor, who is appointed by the Departmental Chair, and three members of the BMG Graduate Program who are elected by voting faculty of the BMG program. The Program's Graduate Advisor will also represent the program on the GSBS Graduate Council. The other three members of the Graduate Program Committee will serve for terms of three years, with one member being replaced alternately each year. The functions of the Program Committee are to make recommendations to the Department Chair and Graduate Dean, on behalf of the Biochemistry and Molecular Genetics Graduate Program Faculty, regarding admission of students to the program, the awarding of Graduate Assistantships and the appointment of a Supervising Professor and Advisory Committee for each graduate student; to supervise the program of each graduate student prior to the formation of an Advisory Committee; to supervise the conduct and content of the Graduate Program's core courses; and to oversee the Program curriculum; and to make recommendations to the faculty concerning the Graduate Program.

B. A Master's Advisory Committee is formally appointed by the Dean of the Graduate School for each graduate student upon the recommendation of the Graduate Program Committee. The Master's Advisory Committee consists of at least three Graduate Faculty members, one of whom is the student's Supervising Professor, who serves as Chair of the committee. A majority of committee members must be voting members of

the Graduate Faculty of the Program of Biochemistry and Molecular Genetics (see APPENDIX 2) and, one member may be a faculty member from outside the Program. Once appointed, the Master's Advisory Committee will become responsible for the student's progress and approve the program of courses and the area of research to be undertaken for the thesis. The Master's Advisory Committee meets whenever necessary, but **not less than twice each year**, for the purpose of reviewing the student's program, the progress toward completing course work and other degree requirements, and the progress in research. Reports of these meetings will be written by the student and submitted to the Graduate Program Advisor within one week after the meeting to become part of the student's permanent file. This report must be signed by the Supervising Professor, graduate student and all members of the Master's Advisory Committee (see APPENDIX 3A for criteria for meeting handouts and minutes, 3B BMG Rubric Advisory Committee, and 3C BMG Student Checklist).

\*A voting Graduate Faculty member is defined as one with a primary or joint appointment in the Biochemistry and Molecular Genetics Program of the Department of Cell Biology and Biochemistry of the TTUHSC Graduate School of Biomedical Sciences.

### III. SELECTION OF SUPERVISING PROFESSOR

Selection of the Supervising Professor is crucial for each student, since the Supervising Professor serves as Chair of the Master's Advisory Committee and most, if not all, of the thesis research is conducted in the Supervising Professor's laboratory. Therefore, in selecting a Supervising Professor, it is the policy of the Program of Biochemistry and Molecular Genetics at the Texas Tech University Health Sciences Center that each incoming graduate student shall become familiar with the Program faculty and their research areas as soon as possible. In most cases the procedure below will be followed in selecting a Supervising Professor.

1. Within the first semester of entering the Graduate Program, each student must interview with each full-time voting Program faculty member to learn of that person's research program and philosophy (see APPENDIX 4). Interviews with each full-time non-voting Program faculty member (at the Lubbock campus) are also required (see APPENDIX 3). Discussion of active research projects in the faculty member's laboratory will serve to inform students of research problems which might become suitable thesis projects. This interview process will also serve as the basis for any subsequently arranged laboratory rotations. The student shall also take the opportunity to seek out other students to learn from their experiences within the Program and Department.

2. Upon completion of all the interviews, the Program faculty strongly urge all students to do at least three rotations. Besides facilitating selection of a Supervising Professor, these rotations will be particularly valuable for those students with no research laboratory experience. The Program faculty recognize, however, that

circumstances may preclude rotations, and therefore, more than one rotation is not mandatory (see APPENDIX 5).

The length of a rotation will be determined in consultation with the Graduate Program Advisor and will be mutually agreeable to both the faculty member and the student. This time may be influenced by such factors as the course load for that semester, the nature of the project assigned the student, etc, but will generally be six to eight weeks. In any case, the student should develop a laboratory rotation plan, and a schedule of rotations should be provided to the Graduate Advisor by the student. After each rotation, the faculty member involved shall file a written laboratory rotation evaluation on that student for inclusion in the student's departmental file folder (see APPENDIX 6A&B). A copy shall also be provided to the student. The faculty member is strongly encouraged to discuss the strengths and weaknesses of the student's performance with the student. This will provide information to the student to prepare for the next rotation and/or their thesis research.

Under special circumstances, the incoming student may choose to do fewer than three laboratory rotations, for instance, previous work experience as a laboratory technician or for other clearly justifiable reasons has decided on a Supervising Professor. However, the student's request must be reviewed by the Graduate Program Committee. Nevertheless, the student shall not commit to that laboratory immediately, nor that faculty member to the student, until the student has completed at least eight weeks of a rotation internship with that faculty member, *i.e.*, **the student cannot select a Supervising Professor until at least one rotation has been satisfactorily completed.** After the rotation, the faculty member shall file the laboratory rotation evaluation for the student with the Graduate Program Advisor. Afterward, if agreeable to the faculty member and the student, the student may request that faculty member as Supervising Professor. This request will be submitted **in writing** to the Graduate Program Advisor, who will consult with the Graduate Program Committee on the merit of the request. If recommended by the Graduate Program Committee, the request will be presented to the Department Chair for approval. However, preliminary to this formal appointment, the prospective Thesis Advisor and graduate student will meet with the Departmental Chair to discuss the issue of graduate student stipend funding.

A fully constituted permanent Master's Advisory Committee, (see Section II. B.) shall be established no later than three months after selection of a Supervising Professor. The student and the Supervising Professor should consult to determine a suitable Master's Advisory Committee, and present these choices to the Graduate Program Advisor. The Graduate Program Advisor will initiate the process of appointment of the Master's Advisory Committee, by submitting the request to the Office of the Graduate School of Biomedical Sciences (see APPENDIX 7).

The appointment of a Supervising Professor and Master's Advisory Committee consists of the following steps:

1. The Graduate Program Advisor will submit the student's choice for Supervising Professor to the Graduate Program Committee for approval.

2. If the Graduate Program Committee approves the selection, that recommendation will be passed on to the Department Chair who will ask the faculty member to serve. If agreeable, the faculty member will immediately assume responsibility for the direction of the student pending official appointment by the Graduate Dean.

3. As soon as possible after being selected, the Supervising Professor will submit to the Graduate Program Committee for approval all recommendations for faculty members to serve on the student's Master's Advisory Committee.

4. If the Graduate Program Committee approves the recommendations, the faculty members will be asked to serve pending official appointment by the Graduate Dean.

5. Official appointment of the Supervising Professor and Master's Advisory Committee is made by the Graduate Dean on the basis of recommendations submitted by the Graduate Program Committee.

Subsequent alterations in the composition of the Master's Advisory Committee will require the concurrence of the majority of both the Master's Advisory Committee and the Graduate Program Committee. The two committees will meet together and arrive at a joint recommendation to be submitted to the Graduate Dean by the Chair of the Graduate Program Committee.

If the student for any reason wishes to change Supervising Professors, the student must first discuss the situation with that faculty member to attempt a resolution of any problems. If that approach is not successful, the student should next discuss the matter with the Biochemistry and Molecular Genetics Graduate Program Advisor for further advice. If that is not successful, the student should petition the Graduate Program Committee in writing for such a change. The request should state the desired transfer and provide specific details of the reasons for making this transfer. Subsequent changes of Supervising Professors for any reason will require prior recommendation of the Graduate Program Committee. The Graduate Program Committee will evaluate the request to determine the substantive nature of the request in making their recommendation. The Graduate Program Committee will then submit their recommendation in writing to the student and the Department Chair, or or the Chair's designate, who will discuss the matter with the graduate student. The final authority for the decision will rest with the Department Chair. If after this due process, the decision is still unsatisfactory to the student, the student may file a grievance with the Dean of the Graduate School of Biomedical Sciences. This procedure will be followed regardless of whether or not a student has selected a Master's Advisory Committee. A new Master's Advisory Committee will be constituted with membership of this committee decided by the student and the new supervisor.

## IV. REGISTRATION

Each student must remain in compliance with the rules and regulations of the Graduate School of Biomedical Sciences. Each student will generally register for a 12 month period per academic year and will register for at least 9 hours each semester and six during the summer. The student's schedule will be determined in consultation with the Chair of the Graduate Program Committee or the Supervising Professor and the student's Master's Advisory Committee. A detailed description of procedures for online registration can be found at the GSBS Website.

## VI. REQUIREMENTS FOR THE MASTER OF SCIENCE DEGREE IN BIOCHEMISTRY AND MOLECULAR GENETICS

### A. Leveling Requirements

Admission to the M.S. program requires prior course work in mathematics, general physics, organic chemistry, analytical chemistry, and biological science. Students with deficiencies in any of these areas may be conditionally admitted pending successful completion of leveling courses prescribed by the Graduate Program Committee. Courses taken for leveling purposes cannot be utilized to satisfy the course work requirements for graduate degree programs.

### B. Graduate Course Work

Master of Science study cannot be calculated solely in terms of credit hours, but the Program normally requires completion of a minimum of 24 semester hours of graduate level work exclusive of credit for the thesis, and 6 hours of thesis (GBCH 6000). Course work beyond the minimum requirements may be defined for the individual student by the Master's Advisory Committee.

All students will be required to take the following core courses or their equivalent as determined by the Graduate Committee:

#### Required Courses

GSBS 5471 Core I: Molecules

GSBS 5372 Core II: Cells

GSBS 5373 Core III: Genes

GSBS 5174 Core IV: Biomedical Seminar Series

GSBS 5275 Core V: Introduction to Biomedical Research

GBMG 6333 Advanced Protein Biochemistry

GSBS 5101 Responsible Conduct of Research

GSBS 5310 Introduction to Statistical Methods in the Biomedical Sciences

In addition to the core courses, each student will be required to register for Biochemistry Seminar (GBMG 7101) once each year and attend all Departmental Seminars. All students, except first year students, will be required to present one departmental seminar each year. Students will be evaluated on the seminar

presentation by a panel of six faculty, who constitute the Seminar Evaluation Committee (see APPENDIX 8 Seminar Evaluation Form).

A student may be exempted from a required Program core course if the student has recently had an equivalent graduate level course and performed satisfactorily in that course, (*i.e.*, a "B" grade or better). The student must petition the Graduate Program Committee **in writing** for the exemption and provide the Graduate Program Committee with sufficient supporting documentation to justify the request. After a careful review of this documentation supplied by the student, the Graduate Program Committee will determine whether exemption is appropriate.

Admission to candidacy will be granted at such time as all the following requirements have been met:

- (1) All conditions relating to admission to the program have been met.
- (2) At least 9 semester hours of the graduate work required for the master's degree have been completed (exclusive of transfer courses).
- (3) All required leveling work has been completed with C or better grades.
- (4) An average grade of 3.0 or better has been maintained in all courses comprising the official program exclusive of leveling work.
- (5) The general field of the thesis has been stated and approved.
- (6) Work to date is acceptable to the departments concerned, as attested by their approval of the application for admission to candidacy.
- (7) The entire program conforms to the general requirements of the Graduate School of Biomedical Sciences and the requirements of the particular degree.

Authority for admitting an applicant to candidacy for a Master of Science degree is vested in the Graduate Council of the Graduate School of Biomedical Sciences. Upon receipt of a recommendation from the Program, the Dean of the Graduate School of Biomedical Sciences will submit it to the Graduate Council for action. The Council may approve the committee's recommendation, or it may, after consultation with the committee, suggest additional requirements which the applicant must satisfy.

The Dean of the Graduate School of Biomedical Sciences will transmit the results of the Graduate Council's action in writing to the applicant, to the Supervising Professor, to the Program Graduate Advisor, and to the Department Chair

## VII. EXPECTATIONS FOR CONTINUATION IN THE PROGRAM AND APPEALS FOLLOWING DISMISSAL

### A. Continuation in the Program

Every enrolled student enrolled is required to maintain a high level of performance and to comply fully with the policies of the Institution and the Program. The Graduate School of Biomedical Sciences reserves the right to place on probation or to dismiss any graduate student who does not maintain satisfactory academic standing

or who fails to conform to the regulations of the Texas Tech University Health Sciences Center.

Every student is expected to maintain a high level of commitment to professional development in all areas. If any aspect of a student's professional development (for example attention to teaching or research responsibilities, appropriate growth toward development of critical thinking skills, appropriate progress toward research goals, *etc.*) is considered to be unsatisfactory by either the Graduate Program Committee or the student's Master's Advisory Committee (if one has been appointed), the student shall be so informed in writing, along with a description of the recommended corrective action and the period of time allowed for the corrective action to be taken. If the student fails to correct the deficiency, the Master's Advisory Committee or the Graduate Program Committee may recommend dismissal of the student from the M.S. program.

If a student's grade-point average for a particular semester falls below 3.0, the student is placed on academic probation (a 3.0 average is the minimum requirement of the Graduate School of Biomedical Sciences). In order to remove probationary status, a student must maintain a 3.0 GPA for the next academic session in which the student is enrolled. Failure to do so will result in dismissal. Regulations governing scholastic probation are based on semester grade-point averages and will be applied regardless of overall grade-point average. The Biochemistry and Molecular Genetics Programs requires all students to obtain at minimum, a letter grade of B, in courses. Failure to do so may result in dismissal from the program.

## B. Appeals and Grievance Process

Student Appeals Policy This policy applies to specific grievances arising from matters affecting students' academic standing and performance such as disputes concerning comprehensive examinations, theses and thesis, and graduate assistantships. Appeals may be made only when alleged prejudicial, arbitrary or capricious action is involved. The burden of proof of unfair influence or action rests with the student.

A student wishing to appeal a decision or action first should discuss the matter with the faculty member or members involved. If the student is not satisfied with the outcome of this effort, the student should contact the Department Chair. This contact, like that with the faculty members, normally is informal, and the Department Chair may take whatever action he or she deems advisable in attempting to resolve the issue. All parties involved should make every effort to resolve the issue without going beyond this level. The Department Chair may consult with either the Graduate Program Committee or an *ad hoc* committee of graduate faculty from the Program (when the appeal is of an action taken by the Graduate Program Committee or a substantial proportion of its elected members) for advice regarding his or her actions in an appeal. If the student still is not satisfied following these meetings and discussions, the student may make a formal appeal to the Dean of the Graduate School of Biomedical Sciences. The appeal shall be processed according to the rules of the Graduate School in effect at the time it is filed with the Dean.

## VIII. THESIS

The final requirement for the Master of Science degree is submission and defense of a thesis based upon original research. What comprises a satisfactory thesis is highly subjective, although some general statements can be made.

1. The thesis should be based on a logical program of research designed to answer fundamental questions in some field of biochemistry or molecular genetics. Therefore, a body of experimental observations leading to no significant conclusions would not be acceptable.
2. The research program should be carried to a reasonable degree of completion.
3. The information gained should comprise a contribution to knowledge worthy of publication in standard peer-reviewed scientific journals.

At the appropriate time in the graduate student's program, a clear-cut agreement should be reached between the student, the Supervising Professor and the Master's Advisory Committee members as to when the aims and goals of the thesis, will have been fulfilled and the research may be terminated. A student may wish to begin writing portions of the thesis earlier, but must receive Master's Advisory Committee approval before terminating research. This agreement will be documented in the signed Minutes of the committee meeting when approval was granted.

The student may then prepare his or her thesis according to the guidelines of the Graduate School of Biomedical Sciences. The thesis shall be typed in final draft form and a copy made available to each member of the Master's Advisory Committee. This draft must be made available to the Committee four weeks prior to the final oral examination. The format of the thesis must conform to Instruction for Preparation and Submitting Thesis and Thesis (<http://www.depts.ttu.edu/gradschool/current/THDManual.php>). If the Master's Advisory Committee finds the final draft acceptable, the Supervising Professor will schedule the Final Examination. Copies of an announcement containing pertinent information, including the student's name, title of the thesis, Master's Advisory Committee membership, examination time, place and other relevant information relating to the examination, and a 150 word or shorter abstract must be prepared and posted throughout the TTUHSC at least a week before the scheduled thesis defense.

The Master's Advisory Committee administers the Final Examination after all the Candidate's studies are completed and the thesis has been found to be acceptable. The examination shall not be administered unless all members of Advisory Committee and the Graduate Dean's representative are present. In special cases, exceptions can be made through petition of the Dean of the Graduate School of

Biomedical Sciences, according to the rules of the Graduate School in effect at that time. (see APPENDIX 11 Rubric for Written and Oral Defense of Thesis)

The format for the final oral examination will be as follows:

- a. The student will present the highlights of the thesis research at a public seminar that shall be announced at least three weeks in advance. The seminar will be open to all faculty, students and other interested people.
- b. An oral examination of the candidate will begin following the seminar. The examination may be devoted to the thesis or its field of investigation, to the candidate's general professional knowledge, judgment and critical reasoning power.
- c. Following the examination, the Master's Advisory Committee will ask the candidate to leave the room, and meet to determine if the Candidate has passed the written and oral portions of the examination. The decision will be reached by a formal vote of the committee members. More than one negative vote shall constitute failure. The Dean of the Graduate School of Biomedical Sciences will be informed by a letter of the outcome of the examination with a copy of the letter being sent to the Graduate Program Committee.

## IX. THESIS FEES

When a Master of Science thesis and its abstract have been approved by a student's Thesis Advisory Committee and accepted by the Dean of the Graduate School of Biomedical Sciences, the candidate will pay the TTUHSC Bursar a "Microfilming and Shipping Charge" for the microfilming. Master of Science thesis will be microfilmed in their entirety, along with the Defense abstract, which is a separate document. One copy of the Defense abstract prepared in accordance with the instructions listed in Thesis/Thesis Manuel available through the Site Map on the Home Page for the Graduate School of Biomedical Sciences, along with the electronic copy of the thesis will be sent to [thesisondemand.com](http://thesisondemand.com) website by the Thesis Supervisor for the student. Details regarding fees are also available there.

## X. STATEMENT OF INTENTION TO GRADUATE

This statement must be filed with the Graduate School of Biomedical Sciences on the appropriate form. A final public oral examination (defense) may be scheduled after the thesis has been read by the advisory committee. The examination may not be administered until at least three weeks have elapsed following the candidate's submission to the GSBS of the notification form giving the time, place, and other information pertaining to the defense.

Dr. Sandra M. Whelley, Graduate Program Advisor and Chair of the Biochemistry and Molecular Genetics Graduate Program Committee.  
(August 22, 2008).

Approved by BMG faculty on 8/28/08-- Subject to revision in periodic future reviews.

APPENDIX 1

Student Progress Timeline

Student Name \_\_\_\_\_

Mentor: \_\_\_\_\_

Graduate Committee Members

- 1 \_\_\_\_\_
- 2 \_\_\_\_\_
- 3 \_\_\_\_\_
- 4 \_\_\_\_\_

<b>Year 1</b>	(hours completed:)	<b>Year 2</b>	(hours completed:)	<b>Year 3</b>	(hours completed:)
Admitted:		Seminar:		Seminar:	00/00/00
Faculty Interviews completed:		Mandatory Committee Meetings		Mandatory Committee Meetings	
Lab Rotations		1		3	
	1	2		4	
	2				
	3			Admitted to Candidacy	
Select Advisor				Fall	
Select Committee					
Fall		Fall		Spring	
				Anticipate Graduation	
Spring		Spring		Thesis Defense	
Summer I		Summer I			
Summer II		Summer II			
Submit					
'Program for M.S. Degree'					

Core Course:

GSBS 5471 Core I: Molecules  
GSBS 5372 Core II: Cells  
GSBS 5373 Core III: Genes  
GSBS 5174 Core IV: Biomedical Seminar Series  
GSBS 5275 Core V: Introduction to Biomedical Research

Other Required Courses

GBMG 6055 Research Methods  
GBMG 7101 Seminar  
GBMG 6000 Thesis  
GBMG 6333 Advanced Protein Biochemistry  
GBMG 7000 Research  
GSBS 5101 Responsible Conduct of Research  
GSBS 5310 Introduction to Statistical Methods

Mandatory Committee Meeting Objectives

1. Choose course work electives; introduce thesis project
2. Approve coursework; review research results;  
present next six month research plan
3. Review thesis research; next six month research plan
4. Review thesis research; next six month research plan

## APPENDIX 2: Program of Biochemistry Graduate Faculty

### Professors

Beverly Chilton, Ph.D. \*

Gail Cornwall, Ph.D. \*

**Johannes Everse, Ph.D.**

**Charles H. Faust, Ph.D.**

Patrick Reynolds, M.D./Ph.D. \*

**Douglas M. Stocco, Ph.D.**

Harry M. Weitlauf, M.D., Departmental Chairman ex officio

### Associate Professors

**Daniel M. Hardy, Ph.D.**

Min Kang, Pharm.D. \*

Vaughan H. Lee, Ph.D. \*

**Clinton C. MacDonald, Ph.D.**

Barry Maurer, M.D./Ph.D. \*

**John Pelley, Ph.D.**

**Brandt Schneider, Ph.D.**

**S. Sridhara, Ph.D.**

**Sandra M. Whelley, Ph.D.**

**Simon C. Williams, Ph.D.**

**Ina Urbatsch, Ph.D.**

### Assistant Professors

Jannette Dufour, Ph.D.\*

Jeffrey Thomas, Ph.D.\*

Daniel R. Webster, Ph.D. \*

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Primary Faculty of the Biochemistry and Molecular Genetics Program are shown in bold.

\* Associate Appointee

## APPENDIX 3A: Criteria for Thesis Advisory Committee Meeting Handouts and Minutes

All students are required to have at a minimum two 6 month thesis committee meetings per year. More frequent meetings and discussions with committee members should be arranged if needed. The Biochemistry and Molecular Genetics Graduate Program requires that all students prepare detailed handouts for the members of the committee and distribute these handouts at least 5 days in advance of the committee meeting. This allows the faculty sufficient time to review and evaluate progress during the time since your last review. At minimum these handouts should contain: (1) a report of student's progress (with grade) of the didactic program of the student; (2) the laboratory activities during the interval since the last meeting including successes or problems that have been encountered; (3) figures and graphs with legends; (4) description of the methods that were used to perform the experiments; (5) discussion of the results including interpretation of the figures and tables that are presented; (6) and goals for the next 6 months or whatever time frame has been set for the next committee meeting.

Minutes of all committee meetings must detail all activities that occurred during the meeting. The minutes must be written up by the student, reviewed by the mentor and distributed by email to committee members within a week of the meeting date. The committee members will then inform the student of any changes that they feel necessary to reflect what occurred at the meeting. When all members are in agreement with the minutes the committee members should sign the document and signed copies need to be given to the committee members, the Graduate Advisor for the Biochemistry and Molecular Genetics Program, and a copy placed in the Departmental File of the student.

**Completion of the following Rubric Evaluation of Student Progress by the Advisory Committee will be used for each Committee Meeting to document student's progress.**

**APPENDIX 3B RUBRIC**

**Biochemistry and Molecular Genetic  
Evaluation of Student Progress by the Advisory Committee**

<b>Student Name:</b>	
<b>Mentor:</b>	
<b>Committee Member:</b>	
<b>Committee Meeting Date:</b>	

**RATINGS:**

- 4. Outstanding Exceed expectations.
- 3. Very Good - Well done, all elements included and clearly addressed
- 2. Acceptable - Adequate with some weakness
- 1. Not Acceptable.

	<b>Rating</b>
Enthusiasm/Motivation	
Work Ethic	
Scientific Curiosity	
Ability to Think Independently	
Scientific Knowledge	
Laboratory Skills/Data quality	
Communication Skills	
Evidence of Progress in Thesis Research	

Additional Comments:


**Committee Meeting Minutes** \_\_\_ Yes \_\_\_ No

Minutes of the meeting written by the student will report comments by the committee, identify any problems discussed and state the research goals to be met before next meeting.

**Next Meeting in** \_\_\_ 1 month \_\_\_ 3 months \_\_\_ 6 months \_\_\_ Other (when Needed)

The following individuals have read and understand the comments on this form and the attached minutes of the meeting.

Committee Member Signature:	
Student's Signature:	
Advisor's Signature:	

Completed Form and Minutes to be returned to the CBB Graduate Program Coordinator within one week after the meeting

**APPENDIX 3C RUBRIC****Biochemistry and Molecular Genetics  
Student Checklist**

Student Name: \_\_\_\_\_

<b>REQUIREMENTS</b>	<b>DATE COMPLETED</b>	<b>GRADE</b>
<b>Interview with faculty</b> completed within the beginning first of the semester		
<b>REQUIRED COURSES</b>		
GSBS 5471 Core I: Molecules		
GSBS 5372 Core II: Cells		
GSBS 5373 Core III: Genes		
GSBS 5174 Core IV: Biomedical Seminar Series		
GSBS 5275 Core V: Introduction to Biomedical Research		
GSBS 5101 Responsible Conduct of Research		
GSBS 5310 Introduction to Statistical Methods		
GBMG 6333 Advanced Protein Biochemistry		
GBMG 7101 Seminar		
Year 1 (attendance requirement only)		
Year 2 w/ presentation		
Year 3 w/ presentation		
GBMG 6055 Research Methods (12 hours total)		
1 <sup>st</sup> Rotation with _____		
2 <sup>nd</sup> Rotation with _____		
3 <sup>rd</sup> Rotation with _____		
GBMG 6135, 6235, 6335, 6535 Topics in Biochemistry		
	<b>Date Completed</b>	
Completed 24 hours of didactic course work		
GBMG 6000 Thesis		
GBMG 7000 Research (6 hours total)		
Advisor Selection (following the end of the 3 <sup>rd</sup> rotation)		
Selection of Advisory Committee and 1 <sup>st</sup> meeting within 2 months of Advisor selection		
Submit Degree Program Admission to Candidacy to GSBS within 2 weeks after 1 <sup>st</sup> Advisory Committee meeting		

**Advisory Committee Meetings Meets Whenever Necessary But Not Less Than Twice a Year. Evaluation Form and Minutes to be Submitted Within One Week After Meeting**

	<b>Date of Meeting</b>	<b>Date Minutes Submitted</b>
Committee Meeting 1		
Committee Meeting 2		
Committee Meeting 3		
Committee Meeting 4		
Committee Meeting 5		

<b>REQUIREMENTS</b>	<b>Date Completed</b>
Submit Intent to Graduate to GSBS	
Submit draft of thesis to Advisory Committee 4 weeks prior to the intended defense date	
Final approval for thesis defense date by Advisory Committee (minimum 3 weeks prior to defense date)	
Thesis defense date	
Approval by Advisory Committee of Written Thesis	
Approval by Advisory Committee of Oral Defense	

See checklist for graduation deadlines from the GSBS website

APPENDIX 4: Faculty Interview List

Student Name: \_\_\_\_\_

The policy of the Program of Biochemistry and Molecular Genetics requires all new incoming students to interview with each faculty member listed below to discuss their research program. The purpose of this is to introduce professionally the new student to each faculty member and vice versa, and to provide the student with sufficient information to choose laboratories for rotations. Therefore, the new student should arrange an appointment with each faculty member for this initial one-half to one hour interview when it is mutually convenient. All faculty must be interviewed. Please remember to take this form with you for the signature or initials of each faculty member interviewed. After all required interviews are complete, return this signed form to the Graduate Advisor. Later, you can indicate your choice of lab rotation(s), upon mutual agreement of you and the faculty member(s). At least one rotation is expected of each student for a minimum of eight weeks, even for those students who may have pre-selected an advisor. Usually, no more than four rotations should be done. Interviews should be completed before the end of the first semester, and the rotations should commence no later than the beginning of next semester.

<u>Primary Faculty</u>	<u>Signature</u>	<u>Associate Faculty</u>	<u>Signature</u>
Johannes Everse	_____	Beverly Chilton	_____
Charles Faust	_____	Gail Cornwall	_____
Daniel M. Hardy	_____	Jannette Dufour	_____
Clinton C. MacDonald	_____	Min Kang	_____
Brandt Schneider	_____	Vaughan H. Lee	_____
S. Sridhara	_____	Barry Maurer	_____
Douglas Stocco	_____	Patrick Reynolds	_____
Ina Urbatsch	_____	Jeffrey Thomas	_____
Sandra Whelley	_____	Dan Webster	_____
Simon C. Williams	_____	Harry M. Weitlauf (Chair)	_____

APPENDIX 5: Laboratory Rotation Schedule

Faculty Member	Time Period
1.	
2.	
3.	

NOTE: If only a single rotation is planned by the Graduate Student, it must be for an eight week period. A formal request for this singular choice should be made to the Program Graduate Committee in writing, specifying the reason(s) for this choice.

## APPENDIX 6A: Graduate Student Rotation Evaluation Form

Student Rotating:	
Rotation Period:	
Faculty Supervisor:	

Each faculty member through whose lab a student rotates is requested to complete this evaluation, which will then be placed in the student's departmental file folder. The purpose of this evaluation is to appraise the performance of the student during the initial laboratory rotations. Criteria to be considered in this evaluation are not limited to, but should include such things as, time spent in the laboratory, reliability, eagerness and willingness to go beyond the work involved in the laboratory, e.g., suggesting additional experiments or doing outside reading, and improvement during the rotation tenure. This should assist us as a Program in determining where to improve the rotation experience for the student, as well as to ascertain whether or not the student is progressing satisfactorily in this phase of their training. In the event the student appears not to be progressing satisfactorily, the Program Graduate Committee would examine further such a situation and appropriate action would then be recommended to the Departmental Chairperson. This could be as little as a minor corrective action, or to the extreme of dismissal from the Biochemistry and Molecular Genetics Program.

1. Briefly describe the nature of the project the student worked on during the rotation.
  
  
  
  
  
  
  
  
  
  
2. Was the performance of the student satisfactory? Explain.
  
  
  
  
  
  
  
  
  
  
3. What level of initiative and motivation did the student show?

4. Would you accept this student into your laboratory after your rotation experience with them? Explain.

5. What do you think would improve this student's laboratory performance?

6. Other remarks.

APPENDIX 6B RUBRIC

**Biochemistry and Molecular Genetic  
Evaluation of Student's Laboratory Rotation**

Student's Name \_\_\_\_\_ Rotation date \_\_\_\_\_

**RATINGS:**

- 4. Outstanding Exceed expectations.
- 3. Very Good - Well done, all elements included and clearly addressed
- 2. Acceptable - Adequate with some weakness
- 1. Not Acceptable.

	<b>Rating</b>
A. Understanding of concepts	_____
B. Independence in laboratory work	_____
C. Commitment, enthusiasm, drive and ambition	_____
D. Laboratory skills	_____
E. Design of experiments and interpretation of results	_____
F. Laboratory notebook and presentation of results	_____

**2. Please add comments on the student's performance that will be of use in evaluating the student's progress and potential in the graduate program.**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Faculty Member Name \_\_\_\_\_ Signature \_\_\_\_\_

Date \_\_\_\_\_

**Review**

Date evaluation reviewed with the student: \_\_\_\_\_

Student's initials (indicating evaluation was reviewed) \_\_\_\_\_

APPENDIX 7: Graduate Student -- Thesis Advisor Agreement

TO: The Program Graduate Advisor  
FROM: The Graduate Student  
RE: Selection of the MS Thesis Advisor  
DATE:

Effective, \_\_\_\_\_, the two parties signed below mutually agree to begin a formal Graduate Student-Dissertation Advisor relationship directed toward the goal of earning a Master of Science degree for the student.

\_\_\_\_\_  
Graduate Student

\_\_\_\_\_  
Thesis Advisor

### Cell Biology & Biochemistry Seminar Evaluation Form

**Date:**

**Evaluator:** \_\_\_\_\_

**Student:**

Mark the appropriate box for each statement.

	Not Acceptable	Acceptable	Very Good	Exceptional
<b>The Science</b>				
The background was logical, clear and led to an important unanswered question.				
The central question to be addressed was presented in the form of a hypothesis with associated specific aims to be addressed.				
The methods were appropriately used and presented.				
The results were presented clearly; and were analyzed and interpreted properly using statistics where appropriate.				
The discussion compared the findings with those from previous investigations.				
A conclusion is offered that is logical and fits the results; and emphasized the overall significance.				
<b>The Presentation</b>				
The presentation was clearly organized.				
The slides were readable, illustrate concepts and data, and provide smooth transition.				
The student was engaging, enthusiastic, and spoke clearly.				
Questions were answered in a confident and knowledgeable fashion.				
The student was able to accept criticism and suggestions readily, and was also able to defend their presentation when appropriate.				

**Comments:**

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APPENDIX 9 RUBRIC

**Biochemistry and Molecular Genetics  
Written and Oral Thesis Rubric**

**Date:** \_\_\_\_\_ **Evaluator:** \_\_\_\_\_  
**Student:** \_\_\_\_\_ **Evaluator** \_\_\_\_\_  
\_\_\_\_\_ **Signature:** \_\_\_\_\_

**RATINGS:**

- 4. Outstanding Exceed expectations.
- 3. Very Good - Well done, all elements included and clearly addressed
- 2. Acceptable - Adequate with some weakness
- 1. Not Acceptable.

**Written Thesis:**

**a.** Well written and organized.

Rating: \_\_\_\_\_

**b.** Research question and its scientific context are clearly stated.

Rating: \_\_\_\_\_

**c.** Logic and rigor of the arguments associated with the project hypothesis.

Rating: \_\_\_\_\_

**d.** Literature review is comprehensive, up to date, selective, analytical and thematic.

Rating: \_\_\_\_\_

**e.** Results section contains sufficient, well presented and interpreted data.

Rating: \_\_\_\_\_

**f.** Experimental methods are detailed and justified.

Rating: \_\_\_\_\_

**g.** Discussion summarizes the finding, provides perspectives by relating them to literature

Rating: \_\_\_\_\_

**h.** Discussion includes study's strengths and weaknesses, implication for research field and future direction of research.

Rating: \_\_\_\_\_

**ADDITIONAL COMMENTS**

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**Oral Presentation and Oral Defense:**

**a.** Quality and organization of the presentation.

Rating: \_\_\_\_\_

**b** Quality of slides to illustrate concepts, data and provide transitions.

Rating: \_\_\_\_\_

**c.** Engagement and enthusiasm of the student.

Rating: \_\_\_\_\_

**d.** Confidence and knowledge exhibited while answering questions.

Rating: \_\_\_\_\_

**e.** Demonstration of research project ownership during oral presentation and defense.

Rating: \_\_\_\_\_

**ADDITIONAL COMMENTS**


