

**GUIDELINES FOR Ph.D.  
GRADUATE PROGRAM IN ORAL BIOLOGY**

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<http://dental.buffalo.edu/departments/oral-biology.html>

### **PROGRAM AND FACILITIES**

**Research Focus Areas** in the Department of Oral Biology can be outlined as:

- *Immunology and Host Defense* (Drs. Connell, Edgerton, Kirkwood, Kramer, Sharma, Visser, Xu)
- *Relationship of Oral Pathogens to Systemic Disease* (Drs. Kay, Scannapieco)
- *Saliva and Salivary Glands* (Drs. Edgerton, Kramer, Scannapieco, Ruhl, Romano)
- *Microbial Pathogenesis of Oral Organisms* (Drs. Connell, Ruhl, Scannapieco, Sharma, Visser)
- *Bone and Connective Tissues/Tissue Engineering* (Drs. Dziak, Kirkwood, Kwon, Xu)
- *Microbiome* (Drs. Diaz, Kauffman)
- *Stem and Progenitor Cell Biology* (Drs. Romano, Kwon, Ikonomou)

Please refer to specific faculty websites for further information.

[\(https://dental.buffalo.edu/departments/oral-biology.html\)](https://dental.buffalo.edu/departments/oral-biology.html)

#### **I. Preamble**

These Guidelines provide graduate students, faculty, and the Directors of Graduate Studies with a description of the program and policies for graduate study in the Department of Oral Biology.

#### **II. Admission Requirements**

A Bachelor degree of Arts or Science is required. A background in biologic and/or chemical science, with some physical chemistry and mathematics, including calculus, is typically required for admission. Doctoral candidates are admitted either through direct admission to the Oral Biology Ph.D. Program or through the Ph.D. Program in Biomedical Sciences (PPBS).

#### **III. Training Program for the Ph.D. Degree**

The Oral Biology Ph.D. Program is interdisciplinary in nature and draws upon the expertise of the faculty in areas such as biochemistry, biophysics, clinical studies, developmental biology, immunology, microbiology, cell and molecular biology, physiology, and pharmacology. Students choose an area of concentration from these disciplines but may also combine work in several fields in order to support their research interests; a research area does not necessarily consist of a single "traditional" scientific

discipline. This program requires instead that students be committed to research and an academic career. The first year program in the Ph.D. Program in Biomedical Sciences (PPBS) is fully accepted towards the Ph.D. degree in Oral Biology. The student is expected to take a heavy concentration of graduate courses (typically 9-12 credit hours) for at least the first three semesters. These courses can be taken from any Graduate Department of the University including the Roswell Park Cancer Institute programs. The nature of the courses can vary depending upon the student's particular interest in Oral Biology but must include the required courses (see details below) and commonly include biochemistry, cell biology, genetics, molecular biology, microbiology, immunology and statistics in addition to the journal club and seminar series given by the Department of Oral Biology. Students are expected to achieve a grade of a "B" or better in all courses. Graduate credit is also arranged for laboratory rotations and dissertation research conducted in a faculty member's laboratory.

During their third semester, students will develop an original research proposal, which they will defend as part of the preliminary (qualifying) examination. Preparing an original research proposal provides an opportunity to apply and sharpen a combination of the skills acquired throughout the first year of the program. This program is designed to prepare students for their Ph.D. research work and for the continual learning process of a career in science. The largest part of developing into a productive research scientist occurs during the research for the dissertation.

#### **IV. Major Professor and Committee Members**

##### Student Advisory Committee (SAC)

Prior to completion of the preliminary exam, students are advised on academic matters by the Student Advisory Committee (SAC). The SAC is composed of the student's major professor and the directors of graduate studies and any additional oral biology faculty members the student chooses. The SAC will discuss the student's progress in the program (course completion, GPA, etc.), and advise on issues such as course selection. One of the Ph.D. Program Co-Directors must be present at all SAC meetings. It is the student's responsibility to schedule meetings with this committee once each semester, and to write the minutes for each meeting, which will be circulated to all members of the committee. The student is responsible for scheduling meetings with the SAC at the end of each semester. These should be completed before the course registration deadline both for the Fall and Spring semesters. Additional meetings may be scheduled at the discretion of the major professor or the Program Co-Directors. The student must complete a [SAC/DC Membership form](#) documenting the composition of the SAC. The student will complete the form and obtain signatures from the major professor, Ph.D. Program Co-Directors, and the Oral Biology Department Chair. The student will provide the fully-signed form to the Ph.D. Program Administrative Assistant who will place it in the student's departmental folder.

##### Dissertation Committee

The Dissertation Committee is chaired by the major professor, and consists of a minimum of five graduate faculty members (including the major professor), three of whom must have a primary appointment in the Department of Oral Biology. The major professor must have a primary or secondary appointment in the department. In addition, a fifth committee member must have his/her primary appointment outside of the Department of Oral Biology, and must hold an appointment equivalent to a tenure-track Assistant Professor or higher at the University at Buffalo or Roswell Park Comprehensive Cancer Center. A non-tenure track faculty member may serve as the outside committee member if he/she is a member of the graduate faculty. Additional Oral Biology graduate faculty members may be appointed upon agreement between the student and his/her major professor, usually with the goal of

bringing some special expertise into the committee. The Oral Biology Department Chair is an ex officio member of all committees, including Dissertation Committees. Students are expected to meet with the committee at least once per year. In these meetings, the student will report to the Dissertation Committee on the progress of their research, and outline plans for the next year.

In preparation for each SAC/ dissertation committee meeting, the student must fill out the student portion (first page) of the [Periodic Academic Review Report](#) and bring it to the meeting. This report also serves as the student's Individual Development Plan (IDP). The academic information requested in this report provides the basis for discussion at the meeting. The second page of the report must be filled out by the major professor after the meeting and signed by the student, major professor and department Chair. The student is responsible for ensuring that the second page is completed and signed soon after the meeting. Students are required to submit minutes following each meeting and:

1. Distribute the minutes to the committee members for their review and approval
2. Track and ensure timely receipt of all approvals
3. Forward the completed/signed Periodic Academic Review Report and the final/approved minutes to the Ph.D. Program Administrator, who will file them in the student's departmental folder.

## V. Course Requirements for the Ph.D. Degree

The Ph.D. degree requirements include a minimum of 72 credit hours; 25 of these must include formal course work (lecture courses in which a letter grade is given); and a minimum GPA of 3.0 is required. Students are expected to receive a grade of "B" or better in all courses. Graduate credit is also granted for laboratory rotations and dissertation research. Participation in the department's Journal Club (ORB519/520 Critical Analysis of Literature in Oral Biology) and Seminar Series in Oral Biology (not a course) is also required. Other requirements include a Ph.D. Qualifying Preliminary Examination and a Ph.D. Dissertation Defense. The Preliminary Examination must be completed during the third semester in the graduate program. This examination is composed of two phases, a written proposal and an oral presentation. A faculty member is appointed by the Graduate Committee to serve as a Preliminary Exam Advisor to the student during the written phase of the exam.

Students admitted directly into the Oral Biology Ph.D. Program have similar course and programmatic requirements as those admitted through the PPBS program. Each student selects a thesis laboratory and the faculty member in charge of that laboratory becomes the student's major professor. The major professor must be a member of the graduate faculty.

## VI. The Curriculum for the Ph.D. Degree

### Ph.D. Program in Oral Biology

#### A. REQUIRED COURSES

Course	Credit Hours
*BMS 501 Cell Biology (fall)	4
*BMS 502 Essentials of Genetics and Genomics (fall)	3
*BMS 503 Principles of Biochemistry (fall)	4
#BMS 514 Introduction to Scientific Investigation and Responsible Conduct	2
#BMS 515 Fundamentals of Biomedical Research I	4
#BMS 516 Fundamentals of Biomedical Research II	3
^ORB 500 Craniofacial Development, Tissue Engineering and Oral Diseases (fall)	2
^ORB 510 Saliva and the Oral Microbiome (spring)	4

^ORB 519	Critical Analysis of Literature in Oral Biology (fall)	1
^ORB 520	Critical Analysis of Literature in Oral Biology (spring)	1
^OS 518	Statistical Methods (spring) (or STA 525 alternate)	4
^ORB 651	Research, Laboratory Rotations	3-6
^ORB 653	Dissertation Guidance (during the last 2 semesters)	1

\* Required Courses for Ph.D. Students Directly Admitted to the Oral Biology Ph.D. Program

# Required Courses for Ph.D. Students Admitted from the PPBS

^ Required Courses for All Ph.D. Students in the Department of Oral Biology

## **B. ELECTIVE COURSES**

### Oral Biology

ORB 545	Dynamics of Bone (fall)	2
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### Biochemistry

BCH 507	Protein Structure and Function (spring)	2
BCH 508	Gene Expression (spring)	2
BCH 519	Bioinformatics and Computational Biology (spring)	3
BCH 607	DNA Replication and Repair (spring)	2

### Biomedical Engineering

BE 520	Biomaterials in Regenerative Medicine (spring)	3
BE 555	Biomechanics and Mechanobiology (spring)	3

### Biological Sciences

BIO 501	Advanced Biological Chemistry (fall)	4
BIO 502	Advanced Cell & Developmental Biology (fall)	4
BIO 556	Evolutionary Genetics (fall)	3

### Microbiology and Immunology

MIC 512	Fundamentals of Immunology (spring)	2
MIC 513	Eukaryotic Pathogens (fall)	2
MIC 515	Virology (fall)	2
MIC 516	Bacteriology (spring)	2

### Neuroscience

NRS 520	Neuroscience I (spring)	4
NRS 524	Neuroscience III (by permission of instructor only)	3

### Physiology

PGY 505	Cell & Membrane Physiology (spring)	4
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### Pharmacology & Toxicology

PMY 512	Principles of Pharmacology II (spring)	4
PMY 516	Graduate Pharmacology II (spring)	5
PMY 526	Trends in Pharmacological Sciences (TIPS) (spring)	2
PMY 527	Translational Pharmacology (spring)	2

### Statistics

STA 525	Statistics for Bioinformatics (spring)	2
PMR 503	Introductory Bioinformatics (fall)	4

### Structural Biology

STB 531	Protein Expression, Purification, and Crystallization (spring)	3
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## **VI. Description of Course Work**

### 1. Formal Course Work:

BMS 501 – Cell Biology (4 credit course/fall). PPBS students will complete this course in the first year of the program prior to matriculating into the Department of Oral Biology.

BMS 502 - Essentials of Genetics and Genomics (3 credit course/fall). PPBS students will complete this course in the first year of the program prior to matriculating into the Department of Oral Biology.

BMS 503 – Principles of Biochemistry (4 credit course/fall). PPBS students will complete this course in the first year of the program prior to matriculating into the Department of Oral Biology.

BMS 514 - Introduction to Scientific Investigation and Responsible Conduct (2 credit course/fall). Direct admission students will register for this course in the first semester of the program.

BMS 515 - Fundamentals of Biomedical Research I (4 credit course/fall). Direct admission students will register for this course in the first semester of the program.

BMS 516 - Fundamentals of Biomedical Research II (3 credit course/fall). Direct admission students will register for this course in the first semester of the program.

ORB 519 and ORB 520 – Critical Analysis of Literature in Oral Biology (1 credit course/each semester). Direct admission students must register for ORB 519 (fall) and ORB 520 (spring) for the first four semesters of the program and PPBS students must register for this course for their first two semesters in Oral Biology. Students will be given an S grade based on presentation and attendance. All graduate students are expected to attend for the duration of their time in the program.

ORB 500 – Craniofacial Development, Tissue Engineering and Oral Diseases (2 credit course/ fall). Direct admission and PPBS students must register for this course as part of the required coursework in Oral Biology.

ORB 510 – Saliva and the Oral Microbiome (4 credit course/ spring). Direct admission and PPBS students must register for this course as part of the required coursework in Oral Biology.

OS 518 - Statistical Methods (4 credit course/ spring). Direct admission and PPBS students must register for this course as part of the required coursework in Oral Biology. STA 525 may be taken as an alternative to fulfill this requirement.

ORB 651 - Research, Laboratory Rotations. Direct admission and PPBS students are required to register for ORB 651 in all semesters registered in the Ph.D. Program in Oral Biology for at least 1 credit hour per semester.

ORB 653 - Dissertation Guidance. Direct admission and PPBS students are required to register for ORB 653 for the last 2 semesters they are registered in the Ph.D. Program in Oral Biology.

## 2. Informal Course Work: Annual Student Seminar

Second Year Students. Students in their second year in the Department as Doctoral students prepare the Research Proposal that is the Department's Preliminary Examination for Application to Candidacy for the Ph.D. degree (see Research Proposal below)

Third Year – Degree Completion. Following completion of the Preliminary Exam, students will be required to present their research to the Oral Biology faculty in an annual one-hour seminar. The purpose of the seminar is to inform the department of research progress, provide an opportunity for the student to receive constructive feedback, and give the students opportunities to present their work orally prior to the dissertation defense. It is the student's responsibility to schedule the seminar, which will usually be held in conjunction with the Oral Biology Journal Club. The student is responsible for ensuring that their major professor is available for the scheduled date and time, and for maximizing the attendance of their dissertation committee members.

## **VII. Preliminary Examination Guidelines**

Students will complete a preliminary exam during the third semester of the Ph.D. program. The Graduate Co-directors will appoint a preliminary exam advisor for each student. For the purposes of the Preliminary exam, each student will have a Proposal Committee chaired by the student's preliminary exam advisor (referred to as the Preliminary Exam Committee (PEC) chair). The PEC Chair will serve as the Committee's administrative head ensuring that (1) the student and the committee adhere to the Proposal Timetable; (2) that both student and faculty are being responsive to this timetable and to the academic objectives of this process; and (3) that discussions of the written drafts and the oral defense are objective and consistent with the Department's academic goals. The graduate student's major professor will not be a participant in the review and evaluation of the student's written Research Proposal or in the student's oral defense, although it is expected that the major professor will be actively and intellectually involved in this process by providing advice, guidance, direction and support to his/her student.

The finalized PEC will consist of a minimum of four graduate faculty members - three of whom (this includes the Chair) must have their primary appointment in the Department of Oral Biology. In addition, at least one committee member must have his/her primary appointment outside the Department. Members of the PEC should be active members of the Graduate Faculty at UB. It is the responsibility of the student to put together the PEC committee (sans the Chair) with the help and guidance of his/her major professor and the Graduate Co-directors. It is strongly advised that this be done as early as possible in the summer. The student is responsible for completing the [Preliminary Exam Committee membership form](#), obtaining all required signatures, and providing the fully signed form to the Ph.D. program administrator. If any committee member is unfamiliar with the ORB Oral Defense process, as the case may be for faculty who are participating in this process for the first time,

the student should ensure that this guideline document is made available to them at the time the committee is being set up.

### Research Proposal: An Overview

The preliminary exam is taken during the third semester of enrollment, typically in the Fall semester of the student's second year. The objectives of the proposal process are to:

- Develop the skills to search, read and evaluate the research literature.
- Develop the ability to interpret the results and conclusions of one research paper to the next logical step.
- Develop the skills to construct a hypothesis or model based on established results that is experimentally testable and a logical extension of the research that provided these results.
- Develop the skills to design a set of specific aims that logically test the hypothesis or model.
- Develop the skills to design a series of doable experiments that rationally address those aims.
- Develop the understanding of the experimental protocols adopted, the likely outcomes of these experiments, and their possible pit-falls.
- Develop the skills to present the above in clearly written established scientific format and to discuss the above in a formal and more informal setting (discussions and closed-door oral defense with the PEC).

### Research Proposal: Description and Process

The research proposal process will begin with the student drafting a specific aims page with the PEC chair. The student will then present the aims of the proposal to the PEC (including the Chair) early in the Fall semester of the second year in the form of a Research Presentation. The specific aims page must be submitted to the PEC one week before the scheduled presentation. During the presentation (~45 minutes), the student will present an overview of the research in their lab, the objective of their research within that context, and the proposed Specific Aims of the work they plan to complete directed toward that objective. This presentation will be evaluated by the student's PEC specifically for its suitability as a starting point for writing a Research Proposal. If this evaluation is positive and all members of PEC are in agreement, the student may continue with writing the proposal. In some cases, this approval may be contingent on modification of the Specific Aims of the proposed research; such changes should be made and approved within one week of the Research Presentation. If the Committee concludes that the Research Presentation, the discussion of possible future experiments, or hypotheses to be tested were not adequate, the student will be given an opportunity to repeat the presentation. The outcome and discussion points of the first PEC meeting will be summarized by the PEC Chair in a written document that will be provided to the student, committee members and the student's major professor.

Next, the student will prepare and submit a written proposal to their PEC within 5 weeks of the Research Presentation, allowing for the one week for approval of any changes in the Specific Aims. The written proposal will follow the format of the NIH F31 fellowship (using the most updated guidelines) and will consist of the following sections (page limitations are maximums and are not meant to imply that each proposal must reach the maximum limits; they refer to single-spaced pages): Specific Aims, 1 page; Significance, 1-2 pages; Approach, 4-5 pages; References, no limit. Figures and Tables will be incorporated directly into the text and are therefore included in the 7-page limit.

The Specific Aims should be a logical extension of published research from the major professor's lab and the broader research topic and should contain a brief but explicit statement of the hypothesis to be tested. As part of the Approach section the student should briefly describe the background of the project; critically evaluate the most pertinent existing knowledge; and specifically identify the problem with which the proposal is intended to address. This section should draw from the material described in the Research Presentation and incorporate any changes to the Aims suggested by the PEC. The Approach should also describe how the Specific Aims can be accomplished. This section need not contain exquisite detail, but the student must be sufficiently conversant with the design and procedures to defend their proper application; discuss their limitations; and to describe probable results and their interpretations. The student should also be able to discuss the work proposed in the context of her/his field in general, e.g., if the work proposed is to be on activation of a specific signaling pathway, the student should be able to discuss cell signaling in general including mechanisms of regulation, binding interactions, and downstream outcomes of receptor ligation in relevant cell types. An outline of the research proposal is shown below. Students will also be provided with examples of exam proposals that have been successfully defended by past ORB students.

#### The Written Research Proposal – Outline

- The written proposal is to consist of 1 page of Specific Aims plus up to six additional pages that include the Significance and Approach sections as is described in detail in the NIH guidelines for F31 applications. These page limits do not include literature citations.
- <https://grants.nih.gov/grants/how-to-apply-application-guide/forms-e/fellowship-forms-e.pdf>
- The Proposal must be single-spaced, using 11 point Arial, Helvetica, Palatino Linotype, or Georgia font and be fully-justified with 0.5 inch margins.
- Each page, except the first page, should be numbered (bottom center).
- Figures, figure legends and tables will be included within the body of the text following the format of NIH fellowship applications. The text plus all figures, figure legends and tables must fit into the page limits described above.

The final draft of the proposal should be organized as follows, with suggested page lengths for each section:

- Specific Aims – 1 page (this page limit is fixed, since the Specific Aims may not be longer than 1 page)
- Significance – 0.5 to 1 page
- Approach, including relevant background or preliminary data obtained by the student, prior members of the student's lab or other laboratories, hypotheses, experiments to be done, experimental design (methods, briefly), expected outcomes (relevant to hypothesis/model), possible difficulties and alternative outcomes – 4-5 pages
- Citations (not included in 7-page limit)

Typically, a written proposal will have 2 or 3 Specific Aims, each of which focuses on a relatively specific aspect or test of the hypothesis or model. An Aim always has at its core a specific, independent experimental approach; an actual experiment; expected experimental data; and interpretation of the data in terms of the hypothesis or model.

Within one week of receiving the written proposal, each member of the PEC will return his/her copy of the document to the student along with a written evaluation. The evaluation should point out major problems to be addressed and corrections to be made, as needed. No grade is assigned at this point. Within two weeks after receiving the Proposal Committee's evaluation, the student must return a revised version to the Committee. Included with the revised proposal is a separate document addressing



each of the reviewers comments in a point-by-point fashion. There is no page limit to this document. The Committee will not return the revised version of the proposal to the student, but will proceed with the oral exam. If one or more Committee members feel that the quality of this second draft is unacceptable, he/she can request that the Committee meet to discuss these concerns. If all members of the Committee concur, the student can be given a "U" grade for the research proposal at that time without an oral defense. Students are strongly encouraged to meet individually with PEC members to discuss the revised version before the oral exam.

The Oral Exam will begin with a public presentation to the ORB department by the student. The specific date, time, and place for the oral exam for each student will be set at the beginning of the Fall semester. To facilitate timely conclusion of this process, it is imperative that the student meet the various proposal preparation deadlines – this will be the responsibility of the student and the PEC Chair. Any request by a student of change in the already set date will only be considered under special circumstances such as major illness. Following the presentation of their research proposal (~45 mins) and a Q&A session from the audience, the student will have a closed-door exam with the PEC and the PEC chair. The PEC will question the student about the project: its rationale; choice of experiments and experimental design, exploring possible short-comings of the experimental protocols and possible alternative, negative, or false positive results; and evaluate the student's knowledge of the general area of the proposal. The objective of the Oral Exam is not simply to have the student recite orally what has been presented in writing, but to examine the student's overall grasp of the research area in which the lab works and about which the Proposal is written.

The PEC will evaluate the oral presentation, the written proposal and the Q&A session in the closed-door meeting and decide upon one of the following courses of action:

1. An unconditional pass (S)
2. A conditional pass - an S grade will be given when limited written revisions or responses to specific questions are deemed unsatisfactory by the Committee - the oral exam will not be repeated. Instead, the Committee will ask for specific revisions or additional material to address any shortcomings.
3. An incomplete - the written proposal must be revised and another oral exam must be taken. The student has two weeks to submit the revisions. An incomplete can be given once only.
4. An Unsatisfactory (U). In this case, the student will be dismissed from the Oral Biology Ph.D. program.

Failure to adhere to the above time table is grounds for dismissal of the student from the doctoral program. In the event that the committee votes to a tie, the PEC chair will cast the tying vote.

Upon successful completion of the oral exam, the student will work with their major professor to prepare and submit a F31 proposal for the next NIH deadline. Students not eligible to submit NIH proposals will work with their major professor to identify other fellowship funding programs to which they can apply.

### Research Progress

The student's Dissertation Committee will meet at least once yearly (or more often at the discretion of the student, major professor, or committee). This will typically occur during the Fall semester of each year. Meetings should continue up to the time the major professor and Committee determine the student can be encouraged to prepare the Doctoral Thesis for written evaluation and oral defense. Results of dissertation committee meetings will be summarized in the annual [Periodic Academic Review Report](#), and will include: (a) courses taken and grade; (b) progress toward goals stated

the previous year; (c) goals for the coming year; (d) complete citation to all abstracts and papers published in preceding year; (e) indication of whether progress toward thesis is satisfactory. If progress is deemed unsatisfactory, the basis for this judgment, and its potential consequences should be explicitly stated. Students are required to attach an Individual Development Plan (IDP) during their annual committee meeting. The IDP should be designed in consultation with the major professor. This is generally targeted to short time frames like the next 6-12 months, and updated periodically. This may be facilitated by the use of online resources such as myIDP (<http://myidp.sciencecareers.org/>). Students are required to present their IDP documents to their thesis committee at year's meeting to get feedback on the appropriateness of the plan and determine if any changes are needed.

The [Periodic Academic Review Report](#) must be completed after each thesis committee meeting, and an appropriately signed copy put in the student's departmental office file. This form will be completed by the thesis advisor and reviewed and signed by the advisor, dissertation committee members and student. Thesis committee reports will be copied to all committee members.

### **VIII. Academic Standards for the Ph.D. Program**

Academic Standing - The following are grounds for probation, dismissal, or non-acceptance into the Oral Biology Department based on PPBS grades or other graduate level grades prior to consideration by our department: (i) Overall GPA below 3.0 in graduate courses. (ii) A grade lower than a B in any required course applied towards the degree. (iii) A, U, or F grade in any graduate course. (iv) Failure to achieve an S grade in all lab rotations. (v) Failure to receive an S grade in the Research Proposal within 12 weeks of public oral presentation. (vi) An Unsatisfactory/U grade in the Research Proposal process results in mandatory re-take or dismissal. In addition, a second U grade in the Research Proposal results in automatic dismissal from the program.

### **IX. Financial Aid**

A. Students accepted will receive a stipend derived from State, research grant funds, or fellowships.

B. Tuition Scholarships can be granted to all full-time students receiving a stipend. Full tuition scholarships will normally cover the entire course obligation the first year; twelve hours of course work until the program is filed; and reduced credit hours per semester after that, unless more credits are required for graduation. The maximum number of credit hours to be covered under the scholarship is 72. If tuition scholarships are not available, the tuition cost will be paid by the major professor from her/his research funds, or from other sources.

C. Time limit for support and tuition waivers. Students are expected to complete their Ph.D. requirements in five years. This will normally be the maximum time financial support and tuition waivers (if available) will be provided. Under extenuating circumstances, a student and/or the major professor may petition the Graduate Affairs Committee for relaxation of this requirement.

### **X. Application to Ph.D. Candidacy**

Once a student passes the Preliminary Examination, has fulfilled all course requirements, and has a grade point average of 3.0 or greater, an [Application to Candidacy](#) and [Certification of Full-Time Student Status](#) must be submitted to the Oral Biology Ph.D. Program Administrator.

### **XI. Doctoral Thesis Defense and Thesis Research Presentation**

The Doctoral Thesis Defense will consist of two separate presentations by the candidate. First, the written thesis will be reviewed by the Thesis Committee and by the Outside Reader. Upon the written approval of the Outside Reader (completion of the Outside Reader Response Form provided to the Co-Directors of Graduate Studies, see below) and by all members of the Thesis Committee, the student will schedule an Oral Presentation of the Thesis to be held with the Thesis Committee; attendance by the Outside Reader is encouraged but not required. Second, following a successful Oral Presentation to the Thesis Committee by the student, the student will schedule an open Departmental Thesis Seminar at which time the student will present her/his doctoral research. The open Departmental Thesis Seminar should be scheduled within 2 weeks of successful completion of the Oral Presentation to the Thesis Committee.

Successful completion of both presentations will constitute a successful defense of the Doctoral Thesis as indicated by the completion of the Graduate School M Form.

The dissertation is composed of several research papers written in a traditional format that includes an abstract, introduction, methods, discussion, and appendix. The introduction section should be extensive, and in the style of a review article, and the discussion section must critically present and analyze the various aspects of the research covered in the manuscripts. The student works closely with their major professor and dissertation committee during the writing of the dissertation. The dissertation must be approved by the major professor, dissertation committee, and the Outside Reader. An Outside Reader is at least a tenure-track faculty member (or equivalent) in another Department in the University or at another academic or research institution. The Outside Reader must be able to provide objective feedback regarding the thesis work (*i.e.* the Outside Reader must be an individual from outside of the department who is not on the dissertation committee, and who has not served as a mentor to the student). The Outside Reader will be arranged by the candidate and major professor, but a formal request to serve as Outside Reader will come by letter from the Directors of Graduate Studies. The Outside Reader will complete the [Outside Reader Response Form](#) and send it to the department in advance of the defense. If the Outside Reader does not attend the Oral Presentation or Thesis Seminar, she/he should be encouraged to submit written questions to the Thesis advisor to be presented to the student at the Oral Presentation.

The open Departmental Thesis Seminar is open to the university community and invited guests. During the presentation, the student will summarize their dissertation research through an oral presentation.

The time-table for Doctoral Thesis Review is given below based on the following considerations: 1) the Thesis Committee members and Outside Reader must have at least 3 weeks to review the thesis, 2) the student will have 2 weeks to address any comments and 3) and the committee has 1 week to approve it for Oral Presentation.

The Thesis, as approved by the student's major professor, must be received by the Thesis Committee members and Outside Reader no later than 6 weeks prior to the projected date for the Oral Presentation of the Thesis to the Thesis Committee. This Thesis Draft must be in full compliance with the format required by the Graduate School.

After approval of the dissertation by the major professor, dissertation committee, Outside Reader, the Oral Presentation of the Thesis to the Thesis Committee is scheduled. The student will be

asked to summarize briefly (40 – 50 min) the essence of the research. The Outside Reader initiates the questioning (if present) followed by the other members of the Thesis Committee. The outcome of the defense is determined by a vote by the dissertation committee and the Outside Reader (if present). The open Departmental Thesis Seminar will be scheduled within 2 weeks of successful completion of the Oral Presentation to the Thesis Committee.

### **M-Form**

The [M-Form](#) verifies completion of the program requirements for the Ph.D. in Oral Biology. The Ph.D. Program Administrator will prepare the M-Form in advance of the Oral Presentation to the Thesis Committee, and provide it to the Ph.D. Program Co-Directors. Immediately after the defense, the Co-Directors will obtain the necessary signatures on the form, and return it to the Administrator, who will forward the original to the Graduate School.

## **XII. Student Leave Policies**

### **1. Vacation Leave**

Departmental policy is that doctoral student stipend and tuition support be provided by the student's major professor. These funds typically are administered by the Research Foundation of the University at Buffalo. Therefore, doctoral students are considered Research Foundation employees. The fringe benefits offered through the Research Foundation (e.g. health insurance, Student Health visits) are detailed in literature made available to all new students.

As Research Foundation employees, doctoral students also are entitled to annual leave appropriate to their time in service. As students, they do fill out electronic time sheets, but do not receive actual leave accruals. However, Department policy is that students will have available to them 2 weeks of leave per year to use for vacation. Those students who need a longer vacation period because of extended travel times may pool two years allowance into a single trip; otherwise, the annual leave time shall be non-accumulating. In regards to vacation leave, the period chosen should result from discussion between the student and major professor and should be consistent with the educational and research commitments associated with the student's academic and research objectives and responsibilities. Students shall also be allowed reasonable medical absences for sickness or treatment. Time spent fulfilling Departmental or Dental/Medical School assignments or responsibilities are not considered vacation or leave time (e.g., assisting in courses, and student recruitment, organizing research day). These policies also apply to Department of Oral Biology doctoral students paid from State funds.

Two principles shall be followed by the student and major professor in discussing leave time: 1) the student and major professor have made a mutual commitment to training and research objectives; and 2) achieving these mutually reinforcing objectives requires flexibility in effort and time-of-effort. Although the major professor cannot forcibly deny a leave request, she or he can certainly view such a request as inconsistent with the student's commitment to these training or research objectives. If disagreements arise which student and major professor are unable to resolve, the Department Head and Director of Graduate Studies should be informed by either the student or major professor or both and an effort will be made to mediate the dispute.

2. **Maternity Leave (Family Medical Leave)**

Students requesting maternity or paternity leave will be granted up to 8 weeks continuous absence during which registration will be continued and stipend support paid. A more prolonged leave may be negotiated by mutual consent of student and major professor. A student taking such leave shall not take additional vacation during that year.

**XIII. Petitions**

Petitions must be submitted to the Co-directors of Graduate Studies and/or the Graduate School (and approved by the Divisional Committee in the latter case) for the following purposes:

- A. Extension of time limit for completion of degree. Students must submit a petition listing justifying reasons for an extension beyond five years for completion of the Ph.D. degree.
- B. Tuition waivers. Students must submit a petition listing justifying reasons for approval of tuition waivers beyond the five-year limit.
- C. Leave of absence. If a student wishes to take a leave of absence a petition must be submitted detailing the reasons for the leave.
- D. Change of Major Professor. A petition to change the major professor must be submitted in the form of a letter to the Directors of Graduate Studies. A copy of this letter and the approval must accompany the student's program form when it is submitted to the Graduate School.
- E. Course requirements. If a student requests that an exception be made to the normal course requirements, the same procedure is followed as in D, above.

**XIV. Grievance Procedure**

Students should feel free to contact the Co-directors of Graduate Studies or the Chairman of the Department on personal and academic matters or with grievances. On matters under departmental jurisdiction in which a student believes he/she has been aggrieved, a formal grievance review may be requested. The request must be in writing from the student concerned to the Chairman of the Department and must be filed within one month of the alleged grievance. It must clearly state the charge of grievance, its effects, and summarize the particulars concerning it. The Chairman of the Department, in consultation with the concerned parties, will appoint an ad-hoc committee with student representation to investigate the grievance. The ad-hoc committee's action is restricted to procedures or administrative matters, as opposed to judgments of academic performance. All hearings of the Grievance Committee will be closed. No formal minutes will be taken. The committee will report its recommendation for resolution of the grievance within one week after filing. Grievance reviews for graduate students are also available through the Graduate School.

**XV. Graduate Student Association**

The Oral Biology Graduate Student Association meets on a formal and informal basis. The Oral Biology GSA offers a supportive environment where graduate students can:

- Discuss research progress and problems in an informal setting
- Improve presentation skills
- Hone job interview skills

- Practice their thesis defense
- Socialize with their peers
- Organize Alternative Career Options Presentations