Graduate Program in Oral Biology
Student Learning Goals, Assessment, and Outcomes

Program Overview
The Graduate Program in Oral Biology offers the School of Dentistry’s only PhD. Training leading to the MS and PhD degrees in Oral Biology is designed for students who seek academic and research careers with a broad understanding of the development, structure, function, and pathology of the orofacial region. Advanced coursework and research emphasizes more specialized areas of interest such as biomaterials and biomechanics, epithelial biology and carcinogenesis, microbiology and immunology, sensory neuroscience, bone biology, craniofacial development and tissue engineering. Students have considerable flexibility to plan programs to accommodate their specific areas of interest.

The PhD in Oral Biology is a research degree and the thesis project constitutes a major part of the program. The program is designed to ensure that graduates will develop the capability to conduct independent research in critical areas of interest in oral biology. Students are expected to design basic and/or translational research projects that advance mechanistic understanding in all disciplines of oral biology and/or propose and develop new methods and technologies for diagnostics or treatment of orofacial conditions.

The M.S. in Oral Biology is intended for individuals who are currently involved in a mentored research program and are seeking to increase their scientific perspectives. A thesis is required.

Procedure to identify goals and assess outcomes
- A draft of the proposed learning goals is presented to faculty for comment
- Revised goals, as per faculty input, are presented to students for comment
- Further revised goals are finalized by Steering Committee
- Steering Committee proposes assessment methods

Program Learning Goals and Assessment
The following goals are expected of each student but may vary, dependent on the nature of the student’s research experience and goals.

1. **Scientific competence in the core discipline**
   Students must demonstrate knowledge of the core discipline and in-depth knowledge of their specific area of inquiry. Competency in experimental design and specific research methods, and the ability to establish a scholarly and professional identity is required.

   **Assessment**
   - Graduate courses in the program of study.
   - Annual reviews by the Graduate Faculty.
   - Presentation in the Oral Biology seminar series each year.
   - Successful completion of preliminary written and oral exams (PhD).
   - Conduct regular informal and formal meetings with advisor and committee members.
   - Successful dissertation defense.
   - Presentation at scientific conferences and submission to peer-reviewed journals.

2. **Broad knowledge of biomedical and biomedical-related sciences**
   Students must demonstrate a broad knowledge of biomedical sciences and other related sciences.
Assessment

1. Presentation in the Oral Biology seminar series every year.
2. Complete a non-clinical minor field of study.
3. Attend the minor discipline’s seminar series.
4. Successfully complete the written and oral preliminary exams (PhD).
5. Meetings with advisor and committee members on a regular basis.

3. **Technical competence in laboratory and computer skills**
Students must have the technical skill in laboratory and/or field measurements necessary to be productive scientists; demonstrate competence in basic computer tools including word processors, graphical applications, spreadsheets, presentation software, and Internet utilization; and use and apply appropriate software for analysis in the chosen discipline of study.

Assessment

1. Complete graduate courses comprising the program of study.
2. Complete graduate minor.
3. Complete biostatistics requirement.
4. Complete required laboratory safety training.

4. **Critical thinking and problem-solving**
Students must be able to critically evaluate research articles; propose and design an experimental strategy; conduct research that includes analysis, interpretation, and integration of datasets that leads to new scientific knowledge, instrumentation, or methods of analysis.

Assessment

1. Graduate courses in the program of study.
2. Presentation in the Oral Biology seminar series every year.
3. Attend minor discipline’s seminar series.
4. Successfully complete the written and oral preliminary exams (PhD).
5. Successfully defend the thesis dissertation.
6. Participate in journal club or similar activities requiring critical review of literature.
7. Present annual chalk talk or other extemporaneous presentation.

5. **Individual and life-long learning skills**
Students must develop the skills necessary to engage in independent learning throughout their careers.

Assessment

1. Graduate courses in the program of study.
2. Presentation in the Oral Biology seminar series every year.
3. Attend minor discipline’s seminar series.
4. Annual reviews by the Graduate Faculty.
5. Successfully complete the written and oral preliminary exams (PhD).
7. Presentations at scientific conferences and manuscript submission to peer-reviewed journals.

6. **Competence in scientific communication**
Students must develop the skills necessary to effectively communicate in written and oral formats.
Assessment
• Graduate courses in the program of study.
• Presentation in the Oral Biology seminar series every year.
• Attend minor discipline’s seminar series.
• Annual reviews by the Graduate Faculty.
• Successfully complete the written and oral preliminary exams (PhD).
• Successfully defend the thesis dissertation.
• Presentations at scientific conferences and manuscript submission to peer-reviewed journals.
• Participate in journal club or similar activities requiring critical review of literature.
• Present annual chalk talk or other extemporaneous presentation.

7. **Ability to work effectively on a professional team and capitalize on expertise of the scientific community.**
Students must be able to communicate effectively with team members through personal and electronic means and work responsibly in a team, demonstrating professional levels of conduct.

Assessment
• Annual reviews by the Graduate Faculty.
• Mentoring of summer students.
• Demonstrated ability and willingness to seek assistance from proper sources.

8. **An understanding of professional and ethical responsibility**
Students must be able to carry out their responsibilities in a professional and ethical manner.

Assessment
• Complete required laboratory safety training.
• Complete responsible conduct of research training for new investigators.
• Compliance with IRB and IACUC standards, protocols, and regulations.

**Outcomes**
The Graduate Program in Oral Biology is designed to prepare students for careers in research with the highest academic and ethical standards.

The Program will provide:
• knowledge of cutting-edge technical skills in disciplines relevant to Oral Biology.
• ability to formulate hypotheses/objectives, design research protocols, collect and analyze scientific data, and report scientific findings.
• the skills necessary to think critically and solve problems that will be sustainable throughout their careers
• the skills necessary for effective written and oral communication among their peers as well as the public at large
• encouragement to work independently and in a team-based system.