ORAL HEALTH RESEARCH, DOCTOR OF PHILOSOPHY (PH.D.)

The Ph.D. in Oral Health Research prepares students for research-oriented careers as independent scientists in academia, government and industry. The curriculum is specifically designed to provide a strong foundation in biochemistry, molecular biology and oral biology. Students will select a research project from one of three main areas of focus:

- Cancer and developmental biology of the head and neck
- Infection and immunology in diseases of the head and neck
- Tissue engineering, stem cells and new materials for the orofacial region

These areas correspond to the critical areas identified by the National Institute for Dental and Craniofacial Research. The program emphasizes independent research culminating in the conduct of an original research project under the supervision of a faculty adviser. Participating faculty are associated not only with programs and departments within the School of Dentistry, but also the VCU Massey Cancer Center and VCU’s School of Engineering.

Ph.D. students are expected to enroll as full-time graduate students. During the first year, students pursue research rotations, take formal course work and become familiar with current research topics through seminars, discussion groups and lectures by distinguished scientists. By the end of the first year, students choose a faculty adviser and begin dissertation research. Following completion of the research project and defense of the doctoral dissertation, graduates will have acquired the necessary methods, techniques and critical-thinking skills to become the next generation of scientific leaders.

Student learning outcomes

Graduates will have acquired fundamental knowledge of oral health research and strength in cutting-edge research that crosses disciplines. They will:

- Have an understanding of the structure, function and development of tissues of the oral and craniofacial region
- Be able to evaluate molecular mechanisms associated with head and neck cancer
- Be able to evaluate the causes and immunology of infectious diseases of the head and neck
- Be able to evaluate the potential for tissue engineering, stem cells and new materials in treating pathology of the head and neck

Graduates will have developed strong practical foundations on which to build research careers in biomedical science. They will have acquired:

- Practical laboratory skills
- Problem-solving skills and experimental design
- The ability to implement and conduct research based on problem-solving
- An understanding of funding and funding criteria
- The ability to communicate research findings

VCU Graduate Bulletin, VCU Graduate School and general academic policies and regulations for all graduate students in all graduate programs

The VCU Graduate Bulletin website documents the official admission and academic rules and regulations that govern graduate education for all graduate programs at the university. These policies are established by the graduate faculty of the university through their elected representatives to the University Graduate Council.

It is the responsibility of all graduate students, both on- and off-campus, to be familiar with the VCU Graduate Bulletin as well as the Graduate School website (http://www.graduate.vcu.edu) and academic regulations in individual school and department publications and on program websites. However, in all cases, the official policies and procedures of the University Graduate Council, as published on the VCU Graduate Bulletin and Graduate School websites, take precedence over individual program policies and guidelines.

Visit the Graduate study section for additional information on academic regulations for graduate students. (http://bulletin.vcu.edu/graduate/study/general-academic-regulations-graduate-students)

Degree candidacy requirements

A graduate student admitted to a program or concentration requiring a final research project, work of art, thesis or dissertation, must qualify for continuing master’s or doctoral status according to the degree candidacy requirements of the student’s graduate program. Admission to degree candidacy, if applicable, is a formal statement by the graduate student’s faculty regarding the student’s academic achievements and the student’s readiness to proceed to the final research phase of the degree program.

Graduate students and program directors should refer to the following degree candidacy policy as published in the VCU Graduate Bulletin for complete information and instructions.

Visit the Graduate study section for additional information on degree candidacy requirements. (http://bulletin.vcu.edu/graduate/study/general-academic-regulations-graduate-students/degree-candidacy)

Graduation requirements

As graduate students approach the end of their academic programs and the final semester of matriculation, they must make formal application to graduate. No degrees will be conferred until the application to graduate has been finalized.

Graduate students and program directors should refer to the following graduation requirements as published in the Graduate Bulletin for a complete list of instructions and a graduation checklist.

Visit the Graduate study section for additional information on graduation requirements. (http://bulletin.vcu.edu/graduate/study/general-academic-regulations-graduate-students/graduation-requirements)

Apply online at graduate.admissions.vcu.edu (http://www.graduate.admissions.vcu.edu).
Admission requirements

<table>
<thead>
<tr>
<th>Degree</th>
<th>Semester(s) of entry</th>
<th>Deadline dates</th>
<th>Test requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ph.D.</td>
<td>Fall</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Special requirements

- Applicants whose native language is not English must submit satisfactory scores from a standardized test commonly used and deemed appropriate for evaluation of English language proficiency, such as the TOEFL. These scores should be 80 minimum for Internet-based tests, 213 minimum for computer-based tests and 550 minimum for paper-based tests.

In addition to the general admission requirements of the VCU Graduate School (http://bulletin.vcu.edu/graduate/study/admission-graduate-study/admission-requirements), the following requirements represent the minimum acceptable standards for admission:

- A minimum GPA of 3.0 on a 4.0 scale
- A personal statement, which should include long-term career goals to assess reasons behind the candidate’s application; how a Ph.D. helps achieve those goals; the factors motivating a career in research; research experience, including dates, places and duration
- A current resume or curriculum vita
- Three letters of recommendation that speak to the scientific competency and experience of the applicant

Degree requirements

For students with a B.S. degree, the Ph.D. in Oral Health Research will require the completion of a minimum of 102 credits, including a minimum of 35 didactic credit hours comprising seven required courses (12 credits), six core courses (15 credits) and additional electives (eight credits). The remaining 67 credits (at minimum) will be taken in research courses.

Students entering the program with an M.S. will be required to complete a minimum of 81 credits, including a minimum of 23 didactic credit hours comprising six core courses (15 credits) combined with electives (eight credits). These students must also complete the research requirements for a minimum of 58 credits.

Students entering the program with a D.D.S or D.M.D will be required to complete a minimum of 84 credits, including a minimum of 24 didactic credits comprising five required course (six credits), four core courses (10 credits) and electives (eight credits). These students must also complete the research requirements for a minimum of 60 credits.

Curriculum requirements for students entering with a B.S.

Required courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOC 530</td>
<td>Biochemistry, Cell and Molecular Biology Module 1: Protein Structure and Function</td>
<td>2</td>
</tr>
<tr>
<td>BIOC 531</td>
<td>Biochemistry, Cell and Molecular Biology Module 2: Basic Metabolism</td>
<td>1</td>
</tr>
<tr>
<td>BIOC 532</td>
<td>Biochemistry, Cell and Molecular Biology Module 3: Central Dogma of Molecular Biology</td>
<td>1</td>
</tr>
</tbody>
</table>

Electives

Choose eight credit hours

Research requirement

OCMB 705 Oral Biology Oral Biology Directed Research (taken for a minimum of 67 credits) 67

Total Hours 102

Curriculum requirements for students entering with an M.S.

Core courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>OCMB 701</td>
<td>An Introduction to Oral Biology</td>
<td>2</td>
</tr>
<tr>
<td>OCMB 702</td>
<td>Oral Pathogenesis</td>
<td>2</td>
</tr>
<tr>
<td>OCMB 703</td>
<td>Research Topics in Oral Biology</td>
<td>1</td>
</tr>
<tr>
<td>OCMB 704</td>
<td>Oral Biology Seminar Series (one-credit course taken eight semesters)</td>
<td>8</td>
</tr>
<tr>
<td>OCMB 706</td>
<td>Proposal Preparation</td>
<td>1</td>
</tr>
<tr>
<td>OCMB 707</td>
<td>Research Skills and Career Development</td>
<td>1</td>
</tr>
</tbody>
</table>

Electives

Choose eight credit hours

Research requirement

OCMB 705 Oral Biology Oral Biology Directed Research (taken for a minimum of 58 credits) 58

Total Hours 81

Curriculum requirements for students entering with a D.D.S. or D.M.D

Required courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOC 530</td>
<td>Biochemistry, Cell and Molecular Biology Module 1: Protein Structure and Function</td>
<td>2</td>
</tr>
<tr>
<td>BIOC 531</td>
<td>Biochemistry, Cell and Molecular Biology Module 2: Basic Metabolism</td>
<td>1</td>
</tr>
<tr>
<td>BIOC 532</td>
<td>Biochemistry, Cell and Molecular Biology Module 3: Central Dogma of Molecular Biology</td>
<td>1</td>
</tr>
</tbody>
</table>
BIOC 533 | Biochemistry, Cell and Molecular Biology Module 4: Lipids/Membranes and Bioenergetics | 1
---|---|---
OVPR 601 | Scientific Integrity | 1

### Core courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>OCMB 703</td>
<td>Research Topics in Oral Biology</td>
<td>1</td>
</tr>
<tr>
<td>OCMB 704</td>
<td>Oral Biology Seminar Series (one-credit course taken seven semesters)</td>
<td>7</td>
</tr>
<tr>
<td>OCMB 706</td>
<td>Proposal Preparation</td>
<td>1</td>
</tr>
<tr>
<td>OCMB 707</td>
<td>Research Skills and Career Development</td>
<td>1</td>
</tr>
</tbody>
</table>

### Electives

Choose eight credit hours | 8 |

### Research requirement

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>OCMB 705</td>
<td>Oral Biology Oral Biology Directed Research (taken for a minimum of 60 credits)</td>
<td>60</td>
</tr>
</tbody>
</table>

Total Hours | 84 |

**Graduate program director**

Oonagh Loughran, Ph.D.
Associate professor
Email: oloughran@vcu.edu
Phone: (804) 828-3910

**Program website:** dentistry.vcu.edu/programs/oralhealthphd (http://dentistry.vcu.edu/programs/oralhealthphd)