**Program Description**

The goals of our program are: (1) To teach the fundamental concepts and theories that will allow students to understand problems in anatomy and cell biology; (2) To train students in experimental techniques which will help them solve some of these problems at the basic or applied levels; (3) To develop critical thinking, analytical and writing skills.

<table>
<thead>
<tr>
<th>Program Description</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Title of Program</td>
<td>PhD in Anatomy and Cell Biology</td>
</tr>
<tr>
<td>Location in the Organizational Structure</td>
<td>Graduate program in the Basic Sciences at the Brody School of Medicine at East Carolina University</td>
</tr>
<tr>
<td>Official Program or Unit Mission</td>
<td>The Department of Anatomy and Cell Biology is dedicated to the discovery, development, and promotion of biomedical knowledge involving cell biology and the anatomical sciences of Gross Anatomy, Developmental Anatomy, Histology, and Neuroanatomy. Though this mission, we aim to improve human health through innovative educational programs and excellence in research and scholarly activities in a dynamic and diverse learning community.</td>
</tr>
</tbody>
</table>
| Listing of Faculty and Staff Members | Cheryl Knudson, PhD, Professor and Chair  
Edward Apetz, MD, Teaching Assistant Professor  
Hubert Burden, PhD, Professor (0.5 FTE)  
Yan-Hua Chen, PhD, Associate Professor  
Ronald Dudek, PhD, Professor  
Donald Fletcher, PhD, Professor and Vice Chair  
Thomas Louis, PhD, Professor (0.5 FTE)  
Qun Lu, PhD, Associate Professor  
Warren Knudson, PhD, Professor  
Randy Renegar, PhD, Professor and Assistant Dean of Students  
John Smith, PhD, Teaching Associate Professor  
Ann Sperry, PhD, Associate Professor  
David Terrian, PhD, Professor |
| National Accreditations, if any | None |
| Optional details, such as students targeted by the program, research specialties of faculty members, unique program features | Research specialties of faculty members in the Department:  
Cheryl Knudson, PhD, Hyaluronan-CD44 interactions and their influence on BMP-initiated and other signaling pathways that promote cartilage matrix repair and tissue engineering  
Yan-Hua Chen, PhD, Targeted-gene deletion of a tight junction protein and its effect on renal tubular function  
Qun Lu, PhD, Molecular mechanisms of ß-catenin function in brain development and cancer; presenilin interactions with actin cytoskeleton and Alzheimer’s disease pathogenesis  
Warren Knudson, PhD, CD44-initiated signaling pathways, endocytosis and the role of CD44 in tumor stem cell biology  
Randy Renegar, PhD, electron microscopy  
Ann Sperry, PhD, Rearrangement of the germ cell cytoskeleton during mammalian spermatogenesis  
David Terrian, PhD, The trafficking and novel secretory pathways in aged and prematurely senescent cells |
<p>| Elements of the department’s strategic plan that apply to the program | The education of doctoral students in scientific research, and their subsequent conduct of novel research under faculty mentoring, facilitates both their career preparation and the advancement of the research program of the faculty mentor. |</p>
<table>
<thead>
<tr>
<th>Goal/Competency</th>
<th>Outcome or Claim</th>
<th>Evidence</th>
<th>Assessment Tool/Activity</th>
<th>Summary of Assessment Data Collected (To be completed later)</th>
<th>Use of Results to Improve Performance (To be completed later)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comprehensive knowledge of basic cell biology and anatomical sciences</td>
<td>Student has an integrated understanding of cell biology and the anatomical sciences, including fundamental concepts and theories.</td>
<td>Grade of A or B in courses in cell biology and anatomical sciences and journal club (in years 1 &amp; 2). Written comprehensive Doctoral Candidacy Exam</td>
<td>Faculty committee evaluates participation of student in journal club. Faculty committee evaluates written responses to doctoral candidacy to determine pass rate.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teaching Experience</td>
<td>Student has the skills to instruct others and prepare examinations in the anatomical sciences and teach technical skills to others in the laboratory.</td>
<td>Serve as a TA in ANAT 7200 or 7210 or 7215 or PTHE 8008. Work with new students in the research laboratory.</td>
<td>Faculty teaching advisor assessment for effort as a TA. Faculty research advisor assessment for efforts in technical skills.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental Design and Data Interpretation</td>
<td>Student understands the biological theory behind experimental research aims. Student is competent in the technical approaches. Student conducts appropriate interpretation of research data.</td>
<td>Student prepares a written research proposal; this is presented orally and defended. Students present data (written and orally) to committee meeting twice per year.</td>
<td>Entire department faculty evaluates the presentation of dissertation proposal for content and professionalism. Student must pass this exam. In closed meeting after seminar, dissertation committee pose questions and suggest alternative approaches.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oral Scientific Communication</td>
<td>Student can communicate knowledgeably on a research topic outside their area of expertise. Student has the skills to think critically about the research and conclusions of an established scientist.</td>
<td>Students present three research seminars in years 1 &amp; 2. Students defend written research proposal. Students present research in a talk or poster at a scientific meeting.</td>
<td>Entire department faculty evaluates the 3 seminars. Dissertation committee examines the student in areas related to the written research proposal.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Written Scientific Communication</td>
<td>Student can organize and evaluate critically, information from the literature, organize original research data and write an integrated discussion of both.</td>
<td>The student has developed an original research proposal. Student has completed an original research project, written a satisfactory dissertation and defended their work in an open seminar.</td>
<td>Faculty committee must evaluate and approve of the NIH-style (R01) research grant proposal, written and orally defended. Capstone Project: Evaluation of dissertation document, seminar and oral defense by dissertation committee, including scientific proficiency and completeness of the new</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Strategic**
Increased research productivity by faculty.
Program will continue to grow.

| Student research has contributed new ideas, new data used in grant application and publications. Increase the number of students in the program. | Faculty has: 1. Published research article in which students have made contributions. 2. Received funding based on preliminary data to which students have contributed. | Faculty publications and awarded research grants will be tabulated. Outreach for student recruitment increased in order to increase number of students in the program. |
### Program Description

**Response**

The graduate doctoral program in Biochemistry and Molecular Biology is designed to provide mentored training of PhD scientists in theory and practice of research science.

### Full Title of Program

**PhD in Biochemistry and Molecular Biology**

### Location in the Organizational Structure

Graduate program in the Basic Sciences at the Brody School of Medicine at East Carolina University

### Official Program or Unit Mission

The Department of Biochemistry and Molecular Biology is committed to excellence in graduate education, which is one of its essential mandates. The graduate program’s mission is to prepare students for careers as independent research scientists and scholars. Laboratory research is the central element of this program. The Department of Biochemistry and Molecular Biology has grown to include studies in cellular, molecular, and developmental biology, molecular genetics, as well as broader aspects of the health sciences, while still embracing the “classic” topics of metabolism, enzymology, and biomolecular structure. Through courses and seminars, the program provides students with the necessary background to encourage their continued growth in these rapidly changing areas of science.

### Listing of Faculty and Staff Members

<table>
<thead>
<tr>
<th>Name</th>
<th>Title and Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phillip H. Pekala, PhD</td>
<td>Professor &amp; Interim Chair</td>
</tr>
<tr>
<td>Joseph M. Chalovich, PhD</td>
<td>Professor</td>
</tr>
<tr>
<td>Joseph G. Cory, PhD</td>
<td>Professor</td>
</tr>
<tr>
<td>Ronald S. Johnson, PhD</td>
<td>Professor</td>
</tr>
<tr>
<td>George J. Kasperek, PhD</td>
<td>Professor &amp; Assistant Dean for Graduate Studies</td>
</tr>
<tr>
<td>Brett D. Keiper, PhD</td>
<td>Assistant Professor</td>
</tr>
<tr>
<td>Maria Ruiz-Echevarria, PhD</td>
<td>Assistant Professor</td>
</tr>
<tr>
<td>Ruth A. Schwabe, PhD</td>
<td>Assistant Professor</td>
</tr>
<tr>
<td>Saame Raza Shaikh, PhD</td>
<td>Assistant Professor</td>
</tr>
<tr>
<td>Brian M. Shewchuk, PhD</td>
<td>Assistant Professor</td>
</tr>
</tbody>
</table>

### National Accreditations, if any

None

### Optional details, such as students targeted by the program, research specialties of faculty members, unique program features

Faculty have expertise in scientific specialties appropriate to the design and direction of a research-based PhD thesis. Scientific expertise represented in the Department:

- **Phillip H. Pekala, PhD** - Gene expression during adipocyte differentiation.
- **Joseph M. Chalovich, PhD** - Regulation of contraction in skeletal and heart muscle.
- **Joseph G. Cory, PhD** - Chemotherapeutic drug resistance, cell cycle, proliferation and apoptosis.
- **Ronald S. Johnson, PhD** - Enzymatic mechanisms in transcription initiation.
- **George J. Kasperek, PhD** - Graduate education and curriculum development.
- **Brett D. Keiper, PhD** - Control of mRNA translation during embryonic and oncogenic growth and apoptosis.
- **Maria Ruiz-Echevarria, PhD** - Post-transcriptional control of gene expression during differentiation and tumorigenesis.
- **Ruth A. Schwabe, PhD** - Regulation and glycosylation of potassium channels in neuronal cell membranes.
- **Saame Raza Shaikh, PhD** - Dietary fatty acid effects on the immune system.
- **Brian M. Shewchuk, PhD** - Transcriptional regulation and chromatin conformations in growth hormone expression.

### Elements of the department’s strategic plan that apply to the program

The education of doctoral students in scientific research, and their subsequent conduct of novel research under faculty mentoring, facilitates both their career preparation and the advancement of the research program of the faculty mentor.
<table>
<thead>
<tr>
<th>Goal/Competency</th>
<th>Outcome or Claim</th>
<th>Evidence</th>
<th>Assessment Tool/Activity</th>
<th>Summary of Assessment Data Collected</th>
<th>Use of Results to Improve Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qualification for thesis research in the PhD program</td>
<td>Student is competent in the theory behind their proposed research, understands the technical tools necessary to conduct the research, and is prepared to conduct the experimental aims.</td>
<td>1. Construct and write a complete and original NIH-style (R01) research grant proposal. 2. Present and defend the proposal in a one hour seminar and subsequent question/answer period.</td>
<td>Faculty committee must evaluate and approve of the NIH-style (R01) research grant proposal, written and orally defended.</td>
<td><strong>To be completed later</strong></td>
<td><strong>To be completed later</strong></td>
</tr>
<tr>
<td>Increased scientific presentations and journal publications by students</td>
<td>Student has the skills to contribute to expert scientific knowledge among peers in their field.</td>
<td>1. Publish an article in a peer reviewed journal. 2. Present research in a talk or poster at an expert regional, national or international meeting.</td>
<td>Publications and meeting presentations by current students in the PhD program will be counted.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Successful presentation of departmental seminars</td>
<td>Student can communicate knowledgeably on a research topic outside their area of expertise. Student has the skills to think critically about the research and conclusions of an established scientist.</td>
<td>Present a well prepared one hour seminar on a contemporary research article outside of their area of expertise; appears knowledgeable when answering questions from the invited audience.</td>
<td>Entire department faculty evaluates the presentation for content and professionalism in closed meeting after seminar. Faculty members individually suggest improvements. Student performance is graded.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Successful composition and defense of Dissertation</td>
<td>Student deserves to be awarded the PhD degree</td>
<td>The student has: 1. Completed an original and novel research project. 2. Written a satisfactory thesis. 3. Defended their work in an open seminar and in front of their thesis committee.</td>
<td>Capstone Project Evaluation. The thesis committee evaluates the thesis document, scientific proficiency of the candidate, and the presentation of their complete body of research.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increased research productivity by faculty</td>
<td>Research contributions by the student have contributed to research funding and publications.</td>
<td>Faculty has: 1. Published research article in which students have made contributions. 2. Received funding based on preliminary evidence or data to which students have contributed.</td>
<td>Faculty publications and awarded research grants will be counted.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Program Description:**
The Interdisciplinary Doctoral Program in Biological Sciences is offered by the clinical and basic science departments of the Brody School of Medicine and the Departments of Biology and Chemistry of Harriott College to meet the need for scientifically trained specialists, who are able to move effectively among the disciplines of medicine, biology, and chemistry. The program prepares professionals in specific research disciplines for careers in academia, research, and industry, while giving them a broader scientific perspective that empowers them to work within multidisciplinary teams. The program can accommodate additional areas such as dentistry research, neuroscience, and biomedical engineering, since it consists of a basic core of shared experiences and highly individualized concentration options.

**Full Title of Program:**
Doctor of Philosophy in Interdisciplinary Biological Sciences

**Location in the Organizational Structure:**
Brody School of Medicine and Harriott College of Arts and Sciences
Departments of Pathology and Laboratory Medicine, Biology, Chemistry

**Official Program or Unit Mission:**

**Listing of Faculty and Staff Members:**
See attached list

**National Accreditations, if any:**

**Optional details, such as students targeted by the program, research specialties of faculty members, unique program features:**
A broad variety of specialties from medical sciences, molecular, evolutionary, developmental, and ecological biology, pharmaceutical, biological, organic, and computational chemistry.

**Elements of the department’s strategic plan that apply to the program:**
STEM Initiative, Interdisciplinary Research
### Goals/Competencies

<table>
<thead>
<tr>
<th>Goal/Competency</th>
<th>Outcome (or Claim)</th>
<th>Evidence</th>
<th>Assessment Tool/Activity</th>
<th>Summary of Assessment Data Collected (To be completed later)</th>
<th>Use of Results to Improve Performance (To be completed later)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral scientific communication</td>
<td>Every student should be able to present an organized understandable research seminar to a general scientific audience.</td>
<td>Annual presentation in BISC/BIOL/CHEM 8815 seminar and dissertation defense.</td>
<td>Evaluation form submitted by at least 2 faculty</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Written scientific communication</td>
<td>Every student should be able to effectively communicate written research results.</td>
<td>Dissertation Proposal, Dissertation Peer reviewed publications</td>
<td>1-2 Evaluation by student’s Committee. 3 Evaluation by reviewers and editor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graduates will be successful researchers and teachers</td>
<td>Every graduate will obtain an appropriate position after graduation</td>
<td>Graduates should obtain a postdoctoral, academic or industrial position or enroll in further education</td>
<td>Survey of graduates</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Program will continue to grow (strategic)</td>
<td>Additional students will enroll. Further areas of study will be added as they are developed.</td>
<td>Enrollment Number of concentrations</td>
<td>Minutes of Steering Committee. Evaluation report.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**East Carolina University Assessment Reporting Plan 2008-2009**

**Department:** Pathology and Laboratory Medicine  
**Academic Program:** Ph.D. in Interdisciplinary Biological Sciences  
**Created:** February 18, 2009  
**Revised:**  
**Approved:**
INTERDISCIPLINARY DOCTORAL PROGRAM IN BIOLOGICAL SCIENCES

FACULTY LIST

Department of Pathology and Laboratory Medicine
http://www.pathology.ecu.edu/public/faculty/fac.htm

Arthur P. Bode, Ph.D.
John Christie, M.D., Ph.D.
Larry Dobbs, M.D., Ph.D.
L. Robert Hanrahan, M.D.
Donald R. Hoffman, Ph.D.
Anne E. Kellogg, M.D.
Prabhaker G. Khazanie, Ph.D.
Peter J. Kragel, M.D.
John M. Lehman, Ph.D.
Lorita M. Rebellato-deVente, Ph.D.
Paul H. Strausbauch, M.D., Ph.D.

Department of Biology
http://www.biology.ecu.edu/

Jason E. Bond, Ph.D.
Anthony Capehart, Ph.D.
David Chalcraft, Ph.D.
Robert Christian, PhD
Lisa Clough, PhD
Mary A. Farwell, Ph.D.
Alexandros Georgakilas, PhD
Carol Goodwillie, Ph.D.
Gerhard W. Kalmus, Ph.D.
Alfred C. Lamb III, Ph.D.
Joseph J. Luczkovich, Ph.D.
Thomas J. McConnell, Ph.D.
Ronald J. Newton, Ph.D.
Anthony Overton, PhD
Cindy Putnam-Evans, Ph.D.
Roger Rulifson, PhD
Jean-Luc Scemama, Ph.D.
Margit Schmidt, Ph.D.
Charles A. Singhas, Ph.D.
John W. Stiller, Ph.D.
Kyle G. Summers, Ph.D.
Edmund J. Stellwag, Ph.D.
Yong Zhu, Ph.D.
Department of Obstetrics and Gynecology
http://www.ecu.edu/obgyn/hodson.htm
Charles A. Hodson, Ph.D.

Department of Surgery
http://www.surgery.ecu.edu/faculty.htm
Carl E. Haisch, M.D.
Kathryn M. Verbanac, Ph.D.

Department of Pediatrics
http://www.ecu.edu/pediatrics/faculty.htm#Genetics
Charles E. Boklage, Ph.D.
John E. Wiley, Ph.D.

Department of Medicine
http://www.ecu.edu/internalmed/facultylist.htm
Paul Bolin, Jr., M.D.
George Sigounas, PhD

Department of Anatomy and Cell Biology
http://www.ecu.edu/anatomy/terrian.htm
David M. Terrian, Ph.D.

Department of Comparative Medicine
http://www.ecu.edu/comparativemedicine/contact.html
Stephen Vore, D.V.M.

Department of Microbiology and Immunology
http://www.ecu.edu/microbiology
This document contains the Program Description and the Outcomes and Assessment Plans for the doctoral program in Microbiology & Immunology.
<table>
<thead>
<tr>
<th>Program Description</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Title of Program</td>
<td>Ph.D. in Microbiology and Immunology</td>
</tr>
<tr>
<td>Location in the Organizational Structure</td>
<td>Department of Microbiology and Immunology, Brody School of Medicine.</td>
</tr>
<tr>
<td>Official Program or Unit Mission</td>
<td>The Department of Microbiology and Immunology provides support for the educational, research and service missions of the University. The department offers a variety of courses for graduate and medical students that enroll students both within and outside the department. The department houses grant supported research programs which provide graduate students the opportunity to perform independent and creative research. Through the courses and research experience offered, the Department of Microbiology and Immunology plays a critical role in training physicians and basic scientists who will contribute to health care.</td>
</tr>
</tbody>
</table>
| Listing of Faculty and Staff Members | o Immunobiology Faculty  
  • F. Ted Bertrand  
  • Richard Franklin  
  • Mark Mannie  
  • James McCubrey  
  • Mary Jane Thomassen  
  • Kathryn Verbanac  
  o Virology Faculty  
  • Shaw Akula  
  • Isabelle Lemasson  
  • Achut Malur  
  • Rachel Roper  
  o Bacteriology Faculty  
  • James Coleman  
  • Everett Pesci  
  • Daniel Martin  
  • MD Motaleb  
  • R. Martin Roop  
  • C. Jeffrey Smith |
| National Accreditations, if any |  |
| Optional details, such as students targeted | This is one of the oldest, largest, and most successful Ph.D. Programs in the University. This program is unique within the |
| Elements of the department’s strategic plan that apply to the program | The state of North Carolina established the Brody School of Medicine with three legislative mandates: increase access of eastern NC citizens to quality healthcare; emphasize training of primary care physicians; and increase minority access to educational opportunities in the biomedical sciences. From its beginning the school has been committed to developing strengths in education, research and professional service through the recruitment of a faculty with the capacity provide medical education that is solidly grounded in state-of-the-art basic medical sciences. The Ph.D. program in Microbiology & Immunology is an essential ingredient in the recruitment and retention of a high quality faculty that provide the desired medical education and generate the critical mass of scientists for developing productive, grant-funded research programs.

Students in the Microbiology & Immunology Ph.D. Program serve important roles in the educational missions of the Brody School of Medicine and The Graduate School of East Carolina University. All Microbiology & Immunology doctoral students are required as a part of their degree requirements to serve as teaching assistants for at least two semesters in the laboratory sections of the department’s two major courses for medical students.

The research missions of the University, the Brody School of Medicine, and the Department of Microbiology and Immunology benefit greatly from the presence and strength of the Microbiology & Immunology Ph.D. program. Student participation in the research programs enriches these enterprises with fresh ideas and students have authored or co-authored much of the peer reviewed publications arising from the externally funded research. There is a critical synergy between the growth and development of the Microbiology & Immunology Ph.D. program, the recruitment of a strong faculty, and the department’s expanding program of productive grant-supported research. |

<p>| by the program, research specialties of faculty members, unique program features | university because of its intrinsic interdisciplinary characteristics. The program includes three relatively distinct disciplinary faculty/research cores (virology, immunobiology, and bacteriology), that are linked through strong interdisciplinary themes of molecular genetics, cancer cell biology, cell signaling, autoimmunity and mechanisms of pathogenesis. |</p>
<table>
<thead>
<tr>
<th>Goal/Competency</th>
<th>Outcome or Claim</th>
<th>Evidence</th>
<th>Assessment Tool/Activity</th>
<th>Summary of Assessment Data Collected</th>
<th>Use of Results to Improve Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge of the fundamentals</td>
<td>The program graduates will demonstrate a thorough knowledge of the fundamentals of bacteriology, immunology, virology and molecular genetics.</td>
<td>Evidence 1: To graduate a student must obtain a B average or better. Evidence 2: Pass comprehensive exams.</td>
<td>Assessment Method 1: Student Grades in core courses Assessment Method 2: The students undergo comprehensive exams administered by the departmental faculty after the second year of study to determine the students' overall knowledge in three of the following topics, bacteriology, immunology, virology and molecular genetics.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Formulate a creative research proposal</td>
<td>Program graduates will have the ability to write a creative research proposal.</td>
<td>Students are asked to write and orally present an original and creative research proposal.</td>
<td>The student's graduate advisory committee evaluates the proposal and determines if the student is able to formulate an original and creative research idea.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conduct high-quality independent research.</td>
<td>The program graduates will be able to conduct high-quality independent research.</td>
<td>Evidence 1: Progress on dissertation project. Evidence 2: Publication of research results.</td>
<td>Assessment Method 1. A student's research is monitored by both a graduate advisor and graduate advisory committee (GAC). The GAC will monitor the student progress at least twice a year. This</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
committee will be formed by graduate faculty members from both within and outside of the Department of Microbiology and Immunology. In addition, students often present their research in the departmental Microbiology and Immunology Research Forum (MIF) and in School of Medicine sponsored research days. In these forums the students and advisors are able to receive feedback from additional faculty. Assessment Method 2: Publication of the students’ results in quality peer-reviewed journals and presentations at national meetings.

| Teaching and scientific presentation skills. | The program graduates will have effective teaching and scientific presentation skills | Evidence 1: Successfully preparing and presenting both scientific presentations and laboratory lectures. | Assessment Method 1: Observation by faculty in the laboratory classroom and in the Microbiology and Immunology Forum. Assessment Method 2: Feedback sessions with students. |
| We aim to provide a high quality program and as such students should be able to enter high quality post-doctoral positions. | The program graduates will be prepared to obtain high quality post-doctoral opportunities. | Evidence 1: Obtaining a high quality post-doctoral position. Evidence 2: Students are able to obtain positions or career paths they desire. | Assessment Method 1: Student satisfaction in placement. Assessment Method 2: Quality of placement in post-doctoral positions based on reputation, publications, and grants of the post-doctoral mentor. |

**Faculty Assessment:**

<table>
<thead>
<tr>
<th>Goal/Competency</th>
<th>Outcome or Claim</th>
<th>Evidence</th>
<th>Assessment Tool/Activity</th>
<th>Summary of Assessment Data Collected (To be completed later)</th>
<th>Use of Results to Improve Performance (To be completed later)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Funding</td>
<td>Departmental faculty should make a strong effort</td>
<td>Evidence 1: Grants submitted.</td>
<td>Summary of the total grants submitted and research</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Department</td>
<td>Evidence 1: Publications</td>
<td>Evidence 2: Grant dollars obtained.</td>
<td>dollars obtained.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------</td>
<td>--------------------------------------------------</td>
<td>-----------------------------------</td>
<td>------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Publishing</td>
<td>Departmental faculty should actively publish their research results.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graduate Education</td>
<td>Departmental faculty should contribute the graduate program.</td>
<td>Evidence 1: Graduate Teaching/Course Direction Evidence 2: Graduate advisory committees and direction of student research.</td>
<td>Assessment 1: Teaching and course evaluations. Assessment 2: Success measured by student obtaining a degree.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Academic Program Assessment Documents

Program Description and Outcomes & Assessment Plans 2008-2009

The departmental Graduate Studies Committee which includes the graduate faculty served as the Departmental Outcomes and Assessment Committee

2/10/2009

This document contains the Program Description and the Outcomes and Assessment Plans for the doctoral program in Pharmacology & Toxicology.
<table>
<thead>
<tr>
<th>Program Description</th>
<th>Response</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Full Title of Program</th>
<th>Ph.D. in Pharmacology &amp; Toxicology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location in the Organizational Structure</td>
<td>Department of Pharmacology &amp; Toxicology, Brody School of Medicine.</td>
</tr>
<tr>
<td>Official Program or Unit Mission</td>
<td>The Department of Pharmacology &amp; Toxicology provides support for the educational, research and service missions of the University. The department offers a variety of courses for graduate, medical, nursing and allied health students as well as for graduate students enrolled in other basic science departments and degree programs and departments campus wide. The department houses grant supported research programs which provide graduate students the opportunity to be able to perform independent and creative research directed by a mentor. Through the courses and research experience offered, the Department of Pharmacology &amp; Toxicology plays a critical role in training physicians and basic scientists who will contribute to health care.</td>
</tr>
<tr>
<td>Listing of Faculty and Staff Members</td>
<td></td>
</tr>
</tbody>
</table>
| Pharmacology Faculty | David Taylor  
Mona McConnaughey  
M. Saeed Dar  
Jacques Robidoux  
Abdel Rahman  
Ken Soderstrom  
Brian McMillen  
Rukiyah Van Dross-Anderson |
| Toxicology Faculty | Jared Brown  
Jamie DeWitt  
James Gibson |
| National Accreditations, if any | |
| Optional details, such as students targeted by the program, research specialties of faculty members, unique program features | This is one of the oldest Ph.D. Programs in the University and continues to be very successful. The Pharmacology and Toxicology graduate program is important within the university because this discipline is universally recognized to be interdisciplinary in nature. The Pharmacology and Toxicology program within the Brody School of Medicine at East Carolina University includes five relatively distinct areas of faculty research (Cardiovascular, Central nervous system, and Cancer pharmacology as well as, Toxicology and Cell signaling). |
| Elements of the department’s strategic plan that apply to the program | The state of North Carolina established the Brody School of Medicine with three legislative mandates: increase access of eastern NC citizens to quality healthcare; emphasize training of primary care physicians; and increase minority access to educational opportunities in the biomedical sciences. From its beginning the school has been committed to developing strengths in education, research and professional service through the recruitment of a faculty with the capacity to provide medical education |
that is solidly grounded in state-of-the-art basic medical sciences. The Ph.D. program in Pharmacology and Toxicology is an essential ingredient in the recruitment and retention of a high quality faculty that provides the desired education and generates the critical mass of scientists necessary for developing productive, grant-funded research programs.

Students in the Pharmacology and Toxicology Ph.D. Program serve important roles in the educational missions of the Brody School of Medicine and The Graduate School of East Carolina University. Once they pass the doctoral candidacy examination, all Pharmacology & Toxicology doctoral students are required as a part of their doctoral training to present classroom lectures in the department’s course for Physician Assistant students which provides them with the educational training that will benefit them if they choose a career in academia.

The research missions of the University, the Brody School of Medicine, and the Department of Pharmacology and Toxicology benefit greatly from the presence and strength of the Pharmacology & Toxicology Ph.D. program. Student participation in the research programs enriches these enterprises with fresh ideas and students have authored or co-authored a significant number of peer reviewed publications from the department and were recipients of NIH funded pre-doctoral research within the department. There is an important interrelationship between the growth and development of the Pharmacology and Toxicology Ph.D. program, the recruitment of a strong faculty, and the department's productivity in research.
# Student Assessment

<table>
<thead>
<tr>
<th>Goal/Competency</th>
<th>Outcome or Claim</th>
<th>Evidence</th>
<th>Assessment Tool/Activity</th>
<th>Summary of Assessment Data Collected</th>
<th>Use of Results to Improve Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge of the fundamentals</td>
<td>The graduates of the Pharmacology and Toxicology Ph.D. program will demonstrate a thorough overall knowledge of the fundamentals of the pharmacodynamic principles of pharmacology as well as the principles of pharmacokinetics. Graduates of the program should also demonstrate a sound general knowledge of toxicological principles and the impact of environmental and occupational exposures to toxicants on the health and welfare of the population.</td>
<td>Evidence 1: To remain in the doctoral program, a student must maintain an average grade of B or better. Evidence 2: Pass both the written and the grant writing exercise components of the doctoral candidacy examination. Evidence 3: Complete an original dissertation research project, write the results in an approved dissertation format and defend the findings in an open public seminar.</td>
<td>Assessment Method 1: Student Grades in core courses offered by the department as well as courses offered by other departments in BSOM and ECU. Assessment Method 2: The students undergo a comprehensive examination administered by the departmental faculty after the second year of study to determine the students’ overall knowledge in the following areas: general pharmacological principles, pharmacokinetics and pharmacodynamics, cardiovascular pharmacology, central nervous system pharmacology, cell signaling, cancer pharmacology and toxicology plus additional knowledge in other biomedical science areas which are related to the student’s dissertation research project.</td>
<td>Summary of Assessment Data Collected (To be completed later)</td>
<td>Use of Results to Improve Performance (To be completed later)</td>
</tr>
<tr>
<td><strong>Formulate a creative research proposal</strong></td>
<td><strong>Program graduates will have the ability to write a creative research proposal.</strong></td>
<td><strong>Students are required to write and orally present an original and creative research proposal written in an NIH grant proposal format. As stated above, this grant writing exercise constitutes the second component of the student’s doctoral candidacy examination.</strong></td>
<td><strong>The graduate faculty and specifically the student’s dissertation advisory committee evaluates the proposal and determines if the student is able to formulate, write, present and defend an original and creative research idea.</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Conduct high-quality independent research under the supervision of his/her dissertation advisor.</strong></td>
<td><strong>The program graduates will develop the ability to conduct high-quality independent research, initially under the close observation of advisor with increasing levels of freedom in developing hypotheses and the experimental plan to test those hypotheses.</strong></td>
<td><strong>Evidence 1: Progress on dissertation project as viewed and graded by the dissertation advisor. Evidence 2: Presentation and publication of research results at local, national and/or international meetings and in peer-reviewed journals.</strong></td>
<td><strong>Assessment Method 1. A student’s research is monitored by both a graduate advisor and dissertation advisory committee (DAC). The DAC will monitor student progress at least twice a year and this information will be shared with the departmental Graduate Studies Committee (GSC) through the Director of the Graduate Program. The GSC has the overall responsibility of monitoring the departmental graduate program in accordance with the faculty approved Policy Guidelines of the Graduate Program within the Department of Pharmacology and Toxicology. The DAC for each student will be composed of graduate faculty members from both within and outside the Department of Pharmacology and Toxicology. In addition, students are required to present their research findings in the departmental Research Seminar program. Students also present their findings in the School of Medicine and ECU-</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goal/Competency</td>
<td>Outcome or Claim</td>
<td>Evidence</td>
<td>Assessment Tool/Activity</td>
<td>Summary of Assessment Data Collected</td>
<td>Use of Results to Improve Performance</td>
</tr>
<tr>
<td>---------------------------------------</td>
<td>----------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>--------------------------------------</td>
<td>---------------------------------------</td>
</tr>
<tr>
<td>Teaching and scientific presentation</td>
<td>The program graduates will have effective teaching and scientific presentation skills</td>
<td>Evidence 1: Successfully preparing and presenting both scientific presentations and laboratory lectures as well as lectures for health care professional students.</td>
<td>Assessment Method 1: Observation by faculty in the classroom, in the Pharmacology and Toxicology Research Seminar program, and the departmental Journal Club. Assessment Method 2: Feedback sessions with students as well as formal assessment through the Pedagogy in Pharmacology course offered by the department.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>We aim to provide a high quality program and as such students should be able to</td>
<td>The program graduates will be prepared to obtain high quality post-graduate employment opportunities. Evidence 2: Graduates of the program have been able to obtain positions or career paths they desire.</td>
<td>Assessment Method 1: Student satisfaction in placement. Assessment Method 2: Quality of placement in post-graduation positions based on reputation, publications, and research program of the post-graduation mentor. For graduates who choose other career paths, the quality of appointments in that career path appear to be exceptional.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Funding</td>
<td>Departmental faculty should make a strong effort to successfully obtain funding for research and to support graduate students choosing to be mentored in their laboratory.</td>
<td>Evidence 1: Grants submitted. Evidence 2: Grant dollars obtained.</td>
<td>Summary of the total grants submitted and funds available to support the research efforts of the investigator.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Publishing</td>
<td>Departmental faculty should actively publish their research results in appropriate peer-reviewed journals.</td>
<td>Evidence 1: Publications in peer reviewed high impact journals appropriate for the topic of the research.</td>
<td>Summary of the departmental research publications.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graduate Education</td>
<td>Departmental faculty should contribute the graduate program.</td>
<td>Evidence 1: Graduate Teaching/Course Direction Evidence 2: Graduate advisory committees and direction of student research.</td>
<td>Assessment 1: Student opinion of teaching by a faculty member and course evaluations by students. Assessment 2: Success measured by student obtaining a degree.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Program Description:**
The Doctoral Program in Physiology is offered by the basic science department of Physiology of the Brody School of Medicine to meet the need for scientifically trained specialists, who are able to move effectively among the disciplines of medicine, biology and physiology. The program prepares professionals in specific research disciplines for careers in academia, research and industry, while giving them a broader scientific perspective that empowers them to work within multidisciplinary teams. The program can accommodate additional areas such as, neuroscience and bioenergetics, since it consists of a basic core of shared experiences and highly individualized concentration options.

**Full Title of Program:**
Doctor of Philosophy in Physiology

**Location in the Organizational Structure:**
Brody School of Medicine  
Departments of Physiology

**Official Program or Unit Mission:**

**Listing of Faculty and Staff Members:**
See attached list

**National Accreditations, if any:**

**Optional details, such as students targeted by the program, research specialties of faculty members, unique program features:**
A broad variety of specialties from medical sciences, organ, molecular, cellular, and integrative physiology, cardiovascular, smooth muscle, pulmonary and neurosciences.

**Elements of the department’s strategic plan that apply to the program:**
Interdisciplinary Research with Human Performance
<table>
<thead>
<tr>
<th>Goal/Competency</th>
<th>Outcome (or Claim)</th>
<th>Evidence</th>
<th>Assessment Tool/Activity</th>
<th>Summary of Assessment Data Collected (To be completed later)</th>
<th>Use of Results to Improve Performance (To be completed later)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral scientific communication</td>
<td>Every student should be able to present an organized understandable research seminar to a general scientific audience.</td>
<td>Annual presentation in PHLY 9000 seminar and dissertation defense.</td>
<td>Evaluation form submitted by at least 2 faculty</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Written scientific communication</td>
<td>Every student should be able to effectively communicate written research results.</td>
<td>Dissertation Proposal, Dissertation Peer reviewed publications</td>
<td>1-2 Evaluation by student’s Committee. 3 Evaluation by reviewers and editor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graduates will be successful researchers and teachers</td>
<td>Every graduate will obtain an appropriate position after graduation</td>
<td>Graduates should obtain a postdoctoral, academic or industrial position or enroll in further education</td>
<td>Survey of graduates</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Program will continue to grow (strategic)</td>
<td>Additional students will be enrolling to match expansion of the department using grant funding.</td>
<td>Enrollment</td>
<td>Evaluation report.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Physiology Faculty
David Brown, Ph.D., Assistant Professor
Robert G. Carroll, Ph.D., Professor
Jian (Dean) Ding, Ph.D., Associate Professor
G. Lynis Dohm, Ph.D., Professor
S. Gregory Iams, Ph.D., Professor, Adjunct Professor Duke School of Nursing
Laxmansa C. Katwa, Ph.D., Professor (Physiology & Cardiovascular)
John Leonard, Ph.D., Professor
Robert M. Lust, Ph.D., Chairman & Professor
Alexander Murashov, M.D., Ph.D., Associate Professor
Richard H. Ray, Ph.D., Professor, Adjunct Professor, Department of Anatomy and Cell
Edward R. Seidel, Ph.D., Professor
David A. Tullis, Ph.D., F.A.H.A., Associate Professor
Michael R. Van Scott, Ph.D., Professor
Jitka Virag, Ph.D., Assistant Professor
Chris Wingard, M.S., Ph.D., Associate Professor
Dianne M. Walters, Ph.D., Assistant Professor
Robert Wardle, Ph.D., Research Assistant Professor
Stefan Clemens, Ph.D., Assistant Professor

Emeritus Faculty
Edward Lieberman, Ph.D., Professor Emeritus
William H. Waugh, M.D., Professor Emeritus

Joint Faculty
Ron Cortright, Ph.D., Associate Professor (Dept. Exercise and Sports Science)
Timothy P. Gavin, Ph.D., Associate Professor (Dept. Exercise and Sports Science)
Scott E. Gordon, Ph.D., Associate Professor (Dept. Exercise and Sports Science)
Robert C. Hickner, Ph.D., Associate Professor (Dept. Exercise and Sports Science)
P. Darrell Neuffer, Ph.D., Associate Professor (Dept. Exercise and Sports Science)

Adjunct Faculty
Kori L. Brewer, Ph.D., Assistant Professor (Emergency Medicine)