

## DEPARTMENTAL PLAN FOR ASSESSMENT OF STUDENT LEARNING 2005-2006 ACADEMIC YEAR

Department: Department of Anatomy & Cell Biology

Program: Ph.D. in Anatomy & Cell Biology

### *Program Mission Statement*

The Department of Anatomy & Cell Biology doctoral program exists to prepare students for careers in research and teaching in the biomedical sciences by providing a quality academic curriculum that includes specific emphases on training, mentoring, and practical experience in state-of-the-art research and in teaching.

### *Program Student Learning Goals*

**Goal 1: Students will become professionals who possess a foundational knowledge in the anatomical and cell biological sciences and are capable of applying that knowledge in their scholarly endeavors as self-directed, life-long learners.**

Objective 1.1: Students will demonstrate a breadth of knowledge in anatomical and cell biological sciences sufficient to provide the student a solid basis for scholarly inquiry and to provide flexibility in their career path.

Objective 1.2: Students will demonstrate a depth of knowledge in specific subject areas of their choice sufficient to support their research and to allow them to make meaningful contributions to the productivity of the laboratory and to advancement of the discipline.

Objective 1.3: Student will demonstrate skills in the use of computer technology to manage information and to search the biomedical literature.

Objective 1.4: Students will demonstrate the ability and the commitment to use primary literature and other resources necessary to remain current in their knowledge of major scientific developments and to acquire and build a

working knowledge base in any relevant area in a way that appropriately develops their area(s) of specialization and promotes integration of knowledge across disciplines.

**Goal 2: Students will become professionals who demonstrate intellectual curiosity and an ability to conduct meaningful scholarly inquiry.**

Objective 2.1: Students will demonstrate an ability to develop clearly stated, meaningful hypotheses and research questions that naturally lead to scientific investigation into areas relevant to human biology and disease.

Objective 2.2: Students will demonstrate an ability to design and implement experimental approaches that have been appropriately chosen to test their hypotheses. This ability is dependent on the student's understanding of the variety of experimental methodologies available to them and their ability to learn new methodologies and apply them in appropriate contexts.

Objective 2.3: Students will demonstrate the ability to appropriately and accurately record and analyze data with a degree of rigor expected by scientific peers.

Objective 2.4: Students will demonstrate the ability to reach scientifically sound conclusions based on their data and on their knowledge of the field. Toward that end, students will recognize real or potential limitations of their experimental approach, be able to articulate alternative conclusions, make a critical analysis of their results and of the work of others, and recognize where additional work is necessary.

Objective 2.5: Students will take opportunity to appropriately disseminate their findings in that way that integrates their activity into the larger body of work, which collectively furthers knowledge in the discipline.

**Goal 3: Students will become professionals who possess communication skills necessary to relate the results of their scholarly work clearly and convincingly to others, and to effectively teach the anatomical and cell biological sciences.**

Objective 3.1: Students will develop oral and written communication skills that will allow them to clearly, concisely, and accurately present their research rationale, methods, results, and conclusions to a scientific audience of their peers.

Objective 3.2: Students will develop the ability to, and understand the importance of, relating scientific knowledge to a lay audience in a way that illustrates the accomplishments and the importance of scientific research.

Objective 3.3: Students will demonstrate the ability to effectively teach the anatomical and cell biological sciences in an undergraduate, graduate, and professional educational learning environment.

**Goal 4: Students will become professionals who recognize and exhibit professional standards in their behavior, who adhere to ethical principles, and who carry out professional responsibilities in service to their institution, the scientific community, and society in general.**

Objective 4.1: Students will demonstrate the ability to establish rapport with colleagues and peers that encourages a team-based mindset toward the accomplishment of departmental goals.

Objective 4.2: Students will be able to articulate the significant hallmarks of ethical behavior and responsible conduct in research for biomedical scientists.

Objective 4.3: Students will be able to articulate the acceptable standards of conduct in the teacher-learner relationship.

Objective 4.4: Students will recognize the importance of offering their professional expertise in service to the department, the school, the university, the profession, and the community.

**Goal 1: Students will become professionals who possess a foundational knowledge in the anatomical and cell biological sciences and are capable of applying that knowledge in their scholarly endeavors as self-directed, life-long learners.**

<i><b>Educational Experiences</b></i>	<i><b>Assessment Methods</b></i>	<i><b>Timeline</b></i>	<i><b>Responsibilities</b></i>
BIMD 500 – Cellular and Molecular Foundations of Biomedical Science <ul style="list-style-type: none"> <li>▪ Lectures</li> <li>▪ Problem-solving sessions</li> <li>▪ Application sessions</li> </ul>	<ul style="list-style-type: none"> <li>▪ Course knowledge-based examinations (MCQ, essay)</li> <li>▪ Student satisfaction surveys</li> </ul>	Annually (Fall)	Dr. Ruit
BIMD 510 – Basic Biomedical Statistics <ul style="list-style-type: none"> <li>▪ Lectures</li> <li>▪ Problem solving</li> </ul>	<ul style="list-style-type: none"> <li>▪ Course examinations</li> <li>▪ Homework problems</li> <li>▪ Student satisfaction surveys</li> </ul>	Annually (Spring)	Dr. Carr
BIMD 512/513 – Seminar in Biomedical Sciences	<ul style="list-style-type: none"> <li>▪ Written assignments</li> <li>▪ Techniques discussion &amp; presentation</li> </ul>	Annually (Fall & Spring)	Dr. Jackson
ANAT 501 – Biomedical Information Retrieval	<ul style="list-style-type: none"> <li>▪ Database searches</li> <li>▪ Internet resource retrieval</li> </ul>	Annually (every session)	Barbara Knight
ANAT 505 - Seminar	<ul style="list-style-type: none"> <li>▪ Student seminar</li> <li>▪ Oral feedback – faculty and peer</li> </ul>	Annually (Fall & Spring)	Course director and senior graduate student peers
ANAT 515 – Histology <ul style="list-style-type: none"> <li>▪ Lectures</li> <li>▪ Laboratory</li> <li>▪ Student-directed study</li> </ul>	<ul style="list-style-type: none"> <li>▪ Course knowledge-based examinations (MCQ, essay, laboratory practicals)</li> <li>▪ Student satisfaction surveys</li> </ul>	Every other year in the Spring (in the year ANAT 518 is not offered)	Dr. Dunlevy
ANAT 518 – Developmental Biology and Human Embryology <ul style="list-style-type: none"> <li>▪ Small group, problem-based learning</li> </ul>	<ul style="list-style-type: none"> <li>▪ Course knowledge-based examinations (oral)</li> <li>▪ Learning issue preparation and presentation</li> <li>▪ Student satisfaction surveys</li> </ul>	Every other year in the Spring (in the year ANAT 515 is not offered)	Dr. Grove
ANAT 513 – Gross Anatomy <ul style="list-style-type: none"> <li>▪ Lectures</li> <li>▪ Dissection laboratory</li> </ul>	<ul style="list-style-type: none"> <li>▪ Course knowledge-based examinations (MCQ, essay, laboratory practical)</li> <li>▪ Quality of cadaver dissection</li> <li>▪ Student satisfaction surveys</li> </ul>	Annually (Summer)	Dr. Atkinson
ANAT 522 – Neuroscience <ul style="list-style-type: none"> <li>▪ Lectures</li> <li>▪ Laboratory</li> <li>▪ Seminar</li> </ul>	<ul style="list-style-type: none"> <li>▪ Course knowledge-based examinations (MCQ, essay, laboratory practicals)</li> <li>▪ Student seminar</li> <li>▪ Student satisfaction surveys</li> </ul>	Annually (Fall)	Dr. Rieke
Elective coursework	<ul style="list-style-type: none"> <li>▪ Course examinations and other evaluations</li> <li>▪ Student satisfaction surveys</li> </ul>	Variable	Course faculty
All course work including courses listed above and ANAT 590 and 591	<ul style="list-style-type: none"> <li>▪ Comprehensive Examination – written and oral components</li> </ul>	After coursework is completed	A&CB faculty, Faculty Advisory Committee
Dissertation work	<ul style="list-style-type: none"> <li>▪ Research accomplishment</li> <li>▪ Annual seminar</li> <li>▪ Completed Program of Study</li> <li>▪ Research presentations</li> <li>▪ Written dissertation</li> <li>▪ Abstracts and publications</li> <li>▪ Final examination</li> </ul>	Continuous throughout a student's program of study	Research mentor, Faculty Advisory Committee

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BIMD 512/513 – Seminar in Biomedical Sciences	<ul style="list-style-type: none"> <li>▪ Written assignments</li> <li>▪ Techniques discussion &amp; presentation</li> </ul>	Annually (Fall & Spring)	Dr. Jackson
ANAT 505 - Seminar	<ul style="list-style-type: none"> <li>▪ Student seminar</li> <li>▪ Oral feedback – faculty and peer</li> </ul>	Annually (Fall & Spring)	Course director and senior graduate student peers
ANAT 501 – Biomedical Information Retrieval	<ul style="list-style-type: none"> <li>▪ Database searches</li> <li>▪ Internet resource retrieval</li> </ul>	Annually (every session)	Barbara Knight
BIMD 510 – Basic Biomedical Statistics <ul style="list-style-type: none"> <li>▪ Lectures</li> <li>▪ Problem solving</li> </ul>	<ul style="list-style-type: none"> <li>▪ Course examinations</li> <li>▪ Homework problems</li> <li>▪ Student satisfaction surveys</li> </ul>	Annually (Spring)	Dr. Carr
ANAT 591 – Special Topics: Light and Electron Microscopy <ul style="list-style-type: none"> <li>▪ Lectures</li> <li>▪ Student project</li> </ul>	<ul style="list-style-type: none"> <li>▪ Course knowledge-based examinations (essay)</li> <li>▪ Completion of student project</li> <li>▪ Student satisfaction surveys</li> </ul>	Every third year in the Spring	Dr. Atkinson
ANAT 591 – Special Topics: Journal Club <ul style="list-style-type: none"> <li>▪ Reading and discussion of literature</li> </ul>	<ul style="list-style-type: none"> <li>▪ Oral presentation and critical evaluation of article from current literature</li> </ul>	As offered	Dr. Dunlevy
Elective coursework	<ul style="list-style-type: none"> <li>▪ Course examinations and other evaluations</li> <li>▪ Student satisfaction surveys</li> </ul>	Variable	Course faculty
Laboratory rotations and ANAT 590 – Readings in Anatomy	<ul style="list-style-type: none"> <li>▪ Research accomplishment</li> <li>▪ Laboratory notebook documentation of research work</li> </ul>	First year (Fall & Spring)	A&CB faculty
All course work including courses listed above and ANAT 590 and 591	<ul style="list-style-type: none"> <li>▪ Comprehensive Examination – written knowledge-based portion, written grant proposal, oral defense of grant proposal</li> </ul>	After coursework is completed	A&CB faculty, Faculty Advisory Committee
Dissertation work	<ul style="list-style-type: none"> <li>▪ Research accomplishment</li> <li>▪ Annual seminar</li> <li>▪ Completed Program of Study</li> <li>▪ Research presentations</li> <li>▪ Written dissertation</li> <li>▪ Abstracts and publications</li> <li>▪ Final examination</li> </ul>	Continuous throughout a student’s program of study	Research mentor, Faculty Advisory Committee

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BIMD 512/513 – Seminar in Biomedical Sciences	<ul style="list-style-type: none"> <li>▪ Written assignments</li> <li>▪ Techniques discussion &amp; presentation</li> </ul>	Annually (Fall & Spring)	Dr. Jackson
ANAT 505 - Seminar	<ul style="list-style-type: none"> <li>▪ Student seminar</li> <li>▪ Oral feedback – faculty and peer</li> </ul>	Annually (Fall & Spring)	Course director and senior graduate student peers
ANAT 591 – Special Topics: Journal Club <ul style="list-style-type: none"> <li>▪ Reading and discussion of literature</li> </ul>	<ul style="list-style-type: none"> <li>▪ Oral presentation and critical evaluation of article from current literature</li> </ul>	As offered	Dr. Dunlevy
Teaching in the undergraduate, graduate and medical education learning environment	<ul style="list-style-type: none"> <li>▪ Lecture preparation and delivery</li> <li>▪ Laboratory teaching</li> <li>▪ Design and administration of student assessment</li> </ul>	Annually (each semester) and as students serve as GTAs in graduate and medical courses/blocks	Course/block faculty
Preparation and presentation of posters or oral presentations for scientific meetings	<ul style="list-style-type: none"> <li>▪ Oral presentation</li> <li>▪ Poster</li> </ul>	As opportunities arise	Research mentor
All course work including courses listed above and ANAT 590 and 591	<ul style="list-style-type: none"> <li>▪ Comprehensive Examination – written knowledge-based portion, written grant proposal, oral defense of grant proposal</li> </ul>	After coursework is completed	A&CB faculty, Faculty Advisory Committee
Dissertation work	<ul style="list-style-type: none"> <li>▪ Research accomplishment</li> <li>▪ Annual seminar</li> <li>▪ Completed Program of Study</li> <li>▪ Research presentations</li> <li>▪ Written dissertation</li> <li>▪ Abstracts and publications</li> <li>▪ Final examination</li> </ul>	Continuous throughout a student's program of study	Research mentor, Faculty Advisory Committee

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BMB 533 – Responsible Conduct of Research	<ul style="list-style-type: none"> <li>▪ Participation in discussion</li> <li>▪ Written summaries</li> </ul>	Every second or third year in the Spring	Dr. Sukalski
Service on departmental, SMHS, or university committees	<ul style="list-style-type: none"> <li>▪ Evaluations from committee chairs</li> </ul>	As opportunities arise	Chair, Director of Graduate Education
Participation in graduate student recruiting activities	<ul style="list-style-type: none"> <li>▪ Participation at departmental events (lunches, meetings)</li> </ul>	As opportunities arise	Chair, Director of Graduate Education, student peers
Service to community, <i>e.g.</i> , science fair mentors or judges, science in K-12, Medical School for the Public	<ul style="list-style-type: none"> <li>▪ Evaluations from event organizers</li> <li>▪ Evaluations from participants</li> </ul>	As opportunities arise	Chair, Director of Graduate Education, student peers
Participation in anatomy component of medical school tours	<ul style="list-style-type: none"> <li>▪ Evaluations from tour organizers</li> <li>▪ Evaluations from organizations who tour the medical school</li> </ul>	As opportunities arise	Director of Graduate Education
Leadership and/or participation in SMHS Graduate Student Organization	<ul style="list-style-type: none"> <li>▪ Evaluations from peers</li> </ul>	As opportunities arise	Director of Graduate Education
All professional experiences as a graduate student	<ul style="list-style-type: none"> <li>▪ Daily conduct as responsibilities are carried out</li> </ul>	As opportunities arise	Feedback from research mentor, faculty, and peers

### ***Use of Results and Process for Documentation and Decision-Making***

An Annual Graduate Program Retreat is held annually during the first week of January. At the retreat, outcomes from all courses and educational experiences during the previous academic year are reviewed by course directors. Each student's progress through their programs of study is reviewed by the Director of Graduate Education, the Departmental Graduate Committee, and individual research mentors. Decisions regarding curricular or program changes are based on collected and presented data. All actions are documented in proceedings of the retreat written and archived by the Department Chairman and the Director of Graduate Education. Assessment activities, results, and decisions for change/improvements are reported annually in the Departmental Annual Report due on October 15.