The Graduate School
of the
Stowers Institute for Medical Research

Handbook for Predoctoral Researchers

August 2016

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MISSION STATEMENT
The mission of The Graduate School of the Stowers Institute for Medical Research is to prepare a superb cadre of predoctoral researchers from around the world for the pursuit of innovative and creative investigations in the biological sciences.

VISION STATEMENT
The Graduate School of the Stowers Institute for Medical Research will prepare a select group of young scientists whose truly transformative and integrative approaches to research will revolutionize 21st century biology.

PROGRAM VALUES
The program focuses on extending the ability of predoctoral researchers through hands-on laboratory experience that stresses highly critical thinking in combination with in-depth training in the latest methodologies.

All successful applicants share a demonstrated ability to perform biological research, as evidenced by previous research experience. Predoctoral researchers perform thesis research in laboratories working at the cutting edge of modern biological inquiry under the direct supervision of outstanding Stowers investigators. Upon completion of their research projects, predoctoral researchers are expected to be able to identify interesting biological problems; devise and create interdisciplinary approaches to those problems; and execute investigations using the best tools available. The graduate program strives for completing a research-based Ph.D. degree in Biology in an average time of five years from matriculation.

STOWERS INSTITUTE FOR MEDICAL RESEARCH
The mission of the Stowers Institute for Medical Research is to make a significant contribution to humanity through medical research by expanding our understanding of basic biological processes, and by improving life’s quality through innovative approaches to the causes, treatment, and prevention of diseases.

The Stowers Institute for Medical Research was established in 1994 through the extraordinary generosity of cancer survivors James “Jim” E. Stowers Jr., the founder of American Century Investments, and his wife Virginia G. Stowers, who dedicated their personal fortune to improving human health through basic research.

The Stowers Institute opened its doors to the first scientific research teams in November 2000 after completion of its state-of-the-art research facility in Kansas City, Missouri. Currently, the Institute is home to over 500 researchers and support personnel (including 100 postdoctoral research associates and 60 predoctoral researchers), 23 independent research programs, and more than a dozen technology development and core facilities. Notable discoveries from the Institute's laboratories appear regularly in the leading peer-reviewed journals in biomedicine. Stowers scientists have established the Institute's international reputation for highest quality basic research aimed at finding answers to some of the most important questions of human biology, health, and disease.
ADMINISTRATION

The daily operation of The Graduate School of the Stowers Institute for Medical Research (GSSIMR) is directed by the Dean, the Associate Dean for Administration & Registrar, the Associate Dean for Academic Affairs, and the Director of Accreditation & Compliance. The Dean reports directly to the President.

FACULTY

The faculty of GSSIMR provides each predoctoral researcher with guidance and encouragement to support his or her success in a research program and assists with the next step in the young scientist’s career. The faculty includes principal investigators, technology center directors, and research advisors at the Stowers Institute for Medical Research (SIMR). They have earned a Ph.D. degree (or equivalent), and are internationally recognized scientists. Each faculty member is considered a leader in his or her field, and many have developed the methodologies that allow much of the current effort in their respective field of study. All faculty have published in top-tier scientific journals, and most are the recipients of one or more prestigious honors or awards. Stowers faculty have extensive experience in teaching at the graduate level.

STANDING COMMITTEES

The Faculty Council is composed of the chairs of the standing committees of GSSIMR: Academic Progression, Admissions, Curriculum, and Rotation. The Associate Dean for Academic Affairs and/or Director of Accreditation & Compliance serve as an ex officio non-voting member. The Dean serves as the Chair of the Faculty Council.

The purpose of the Faculty Council is to serve as an advisory board to the Dean. The chairs serve as representatives of the faculty. It is their responsibility to solicit feedback from the faculty so that everyone has an opportunity to participate in decision-making and has an active role in creating and maintaining a superb graduate school. Faculty Council exists to provide an avenue to initiate, encourage and contribute to the open communication and governance of GSSIMR.

The Academic Progression Committee is comprised of at least three principal investigators as voting members and the Associate Dean for Administration & Registrar as an ex officio non-voting member. The Dean appoints the chair and principal investigators to this committee. The purpose of the Academic Progression Committee is to evaluate criteria for progression and graduation, review academic conduct policy and procedures, hear appeals, and recommend candidates for graduation. The Committee meets at least once a year to discuss policies and data and as needed to hear appeals and progression concerns for predoctoral researchers.

The Admissions Committee is comprised of at least four principal investigators. The Associate Dean for Academic Affairs serves as an ex officio non-voting member. The Dean appoints the chair and principal investigators to this committee. The purpose of the Admissions Committee is to determine which applicants will be interviewed, conduct the interviews, and select the applicants they consider to be most suitable for admission.

The Curriculum Committee is comprised of at least three faculty representatives as voting members and the Associate Dean for Academic Affairs as an ex officio non-voting member. The Dean appoints the chair and faculty representatives to this committee. The purpose of the Curriculum Committee is to review and evaluate the curriculum in general, to consider vital content as well as deficiencies in the
curriculum, and to discuss its major goals and directions. The committee shall provide a forum for faculty and administrators to discuss and make decisions regarding the content, design, delivery, and evaluation of the curriculum. The committee will also be open to feedback from predoctoral researchers and solicit this feedback when appropriate.

The Rotation Committee is comprised of at least three principal investigators as voting members and the Associate Dean for Administration & Registrar who serves as an ex-officio non-voting member. The Dean appoints the chair and the investigators to this committee. The purpose of the Rotation Committee is to assess and evaluate the progress of all GSSIMR first-year predoctoral researchers during their second-term laboratory rotations in a fair and equitable manner and to assess their presentation skills. This evaluation is part of the continuous assessment of the predoctoral researchers’ progress.

**OBJECTIVES OF THE PROGRAM**

The predoctoral research program of GSSIMR stresses critical thinking and the rapid development of experimental prowess. The program also focuses on in-depth understanding of the latest methodologies and approaches. In an average time of five years from matriculation, predoctoral researchers are expected to develop and execute a research project that addresses a significant biological question, which will result in a Ph.D. in Biology. The program culminates with the expectation that each predoctoral researcher is able to identify interesting biological problems, devise interdisciplinary approaches to those problems, and execute investigations using the best tools available.

**PHILOSOPHY OF THE PROGRAM**

GSSIMR is designed to provide exceptionally talented predoctoral researchers with mentorship and hands-on experience to refine their abilities to carry out independent biological research. The program emphasizes research as the primary component and seeks applicants with strong records of research as undergraduates and postgraduates. In addition, it is important that the predoctoral researchers come to GSSIMR with a high level of general knowledge or are willing to pursue that general knowledge on their own time.

The function of the module courses is to introduce the predoctoral researchers to the core disciplines and expose them to the core capabilities of the Stowers Institute. Further, through the rotation courses and the thesis labs, the predoctoral researchers are provided the opportunity to have high quality, hands-on experiences in the research of the Institute. Having exposure to the core capabilities and participating in the hands-on experiences positions the predoctoral researchers for success both in the program and beyond.
ADMISSIONS

GSSIMR recruits predoctoral researchers who have already demonstrated a high degree of research proficiency. All applicants are required to have obtained a bachelor’s degree (B.S. or B.A.) or equivalent from an accredited institution as a prerequisite for admission.

International applicants must complete at least the equivalent of a U.S. four-year degree, including all state and external/internal examinations required for the degree/diploma. Usually this is a minimum of four years of study, beyond grade 12, at the university level, culminating with the award of a first or second degree. Although a degree in another country may have a name similar to a U.S. degree, this does not necessarily indicate that the degree can be accepted as equivalent. For example, three-year general degrees (from Canada, India/Pakistan, France, Lebanon, etc.) are not accepted for admission to GSSIMR.

All official academic records must show the dates of enrollment; the subjects or courses taken, together with the units of credit or time allotted to each subject; and, if rank is determined, rank in the total class or group. The records must also include a complete description of the institution’s grading scale or other standard of evaluation. Maximum and minimum marks and the steps between them must be indicated.

Unless academic records and diplomas are routinely issued in English by the institution, the official records in their original language must be submitted with an authorized, complete, and exact English translation. Applicants’ academic credentials, if earned outside of the U.S., are reviewed for the purpose of assessing institutional accreditation, as well as the U.S. equivalency of the degree and grades.

Although the majority of entering predoctoral researchers will have a solid background in modern molecular biology and biochemistry, the program also encourages applications from candidates who have a demonstrated interest in disciplines such as mathematics, physics, chemistry, or computer science. In all cases, a record of previous research is the primary criterion for admission as demonstrated through the summary of research submitted with the application, the mentor recommendation letters, and publications, if any.

Applications for admission must be received by December 1 (or the subsequent Monday, if December 1 falls on a weekend) for admission in August of the following year, and must include:

- Completed application form. The application form can be found at www.stowers.org/gradschool. Online (and written, if requested) application forms are available from the first week of September through the application deadline. The application form contains the following items:
  - Biographical information, educational background, and contact information of three references
  - Official transcript(s) from all post-high school institutions
  - Detailed summary of undergraduate or post-bachelor’s degree research project(s)
  - List of publication(s) on which the applicant is an author with a description of his or her contribution to the paper(s)
  - Description of a current scientific problem relevant to the research of a Stowers Institute principal investigator that is of significant interest to the applicant. This research can be found at www.stowers.org/research/scientists
  - Candidate statement about himself/herself
  - Description of any additional relevant research experience

Grade point average (GPA) and test scores (e.g., GRE and TOEFL) are not required for admission to GSSIMR, but an applicant may list the GPA and test scores on the application form.
All application materials must be submitted in English. No application fee is required.

Each application is evaluated by the Admissions Committee. Applicants chosen for further consideration must submit the following information:
- Additional biographic and demographic information
- List of courses in progress
- Disciplinary history

After further review by the Admissions Committee and a possible Skype interview, the applicants under consideration are invited to visit the Graduate School and the Stowers Institute for Medical Research to participate in a thorough interview process. Each interview consists of the applicant making a brief scientific presentation to faculty members, meeting individually with faculty members, touring the Stowers Institute, and meeting with predoctoral researchers. Travel for all interviewees is arranged and paid for by GSSIMR.

Following the interviews, the Admissions Committee chooses the selected candidates. Decisions are finalized by early April.

Applicants are considered and accepted without regard to race, creed, color, religion, gender, sexual orientation, national origin, age, disability, military status or any other status protected by law.
ACADEMIC PROGRAM

The programs at GSSIMR stress critical thinking and the rapid development of experimental prowess, instead of traditional didactic coursework.

In August, the predoctoral research program starts with a series of intensive all-day modular seminars with topics ranging from Transcription and Chromatin to Developmental Biology and Advanced Imaging. A concurrent fifteen-week seminar series is devoted to the development of the necessary proficiency in critical thinking, reading, and writing. Attendance is required for each of the seven two-week modules, which include significant lab work, as well as lectures and critical reading and discussion of relevant papers.

In the spring of their first year, predoctoral researchers engage in three consecutive two-month rotations in labs of their choice. Undistracted by traditional coursework, expectations are extremely high for predoctoral researchers to focus almost exclusively on a short-term research project.

Predoctoral researchers enter their thesis research labs in June of their first year and undergo an assessment of knowledge, performance, and research progress within the first three years of their program.

Most critically, doctoral candidates are expected to develop and execute a research project that addresses a significant biological question in order to complete the degree.

The program strives for the completion of a research project in five years. The minimum requirements for successful completion of the Ph.D. program at GSSIMR are the attendance of all modules, successful completion of a minimum of 114 credit units (although a predoctoral researcher completing five years of study and research will have a total of 186 hours), a passing grade on the assessment, a written thesis on original research, and the defense of the written thesis. No credit is given for hours earned at another institution. No course may be taken for credit more than once.

REQUIREMENTS FOR A PH.D. IN BIOLOGY DEGREE

Introductory Modules Requirement
Module courses are designed to introduce predoctoral researchers to a wide range of conceptual and practical topics relevant to research at the Stowers Institute and the wider scientific community. With the exception of Critical Analysis of the Scientific Literature, each module meets all day each day for ten days. Critical Analysis of the Scientific Literature is a 15-week course that meets for several hours throughout the term.

Predoctoral researchers are required to attend all eight modules offered in the fall of their first year in accordance with the Attendance Policy (found under “Policies” in this Handbook). It may be acceptable to miss a small portion of a module (up to one day). However, if extraordinary circumstances, such as a prolonged illness or family emergency, result in a predoctoral researcher missing a significant portion of a module, the same or equivalent module may be taken the following year. In all circumstances of absenteeism, regardless of length, the Dean and Associate Dean for Academic Affairs must be notified immediately. Approval of a short absence must be obtained, in advance if at all possible, from the Dean and course instructors. Approval of make-up modules must be obtained from the Dean.
Module courses are subject to some modifications from year to year by the Curriculum Committee. Below are a list and description of the modules offered in the fall of 2016.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Duration</th>
<th>Credit Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO 700</td>
<td>Critical Analysis of the Scientific Literature</td>
<td>15 weeks (2 ½ hours per day, 2 days per week)</td>
<td>4 credit units</td>
</tr>
<tr>
<td>BIO 701</td>
<td>Transcription and Chromatin</td>
<td>2 weeks (6 hours per day, 5 days per week)</td>
<td>2 credit units</td>
</tr>
<tr>
<td>BIO 702</td>
<td>Genomic and Computational Approaches to Understanding Gene Expression</td>
<td>2 weeks (6 hours per day, 5 days per week)</td>
<td>2 credit units</td>
</tr>
<tr>
<td>BIO 703</td>
<td>Proteomic Approaches to Understanding the Architecture of Protein Complexes</td>
<td>2 weeks (6 hours per day, 5 days per week)</td>
<td>2 credit units</td>
</tr>
<tr>
<td>BIO 704</td>
<td>Fundamentals in Light Microscopy and Live 3D Cell and Embryo Imaging</td>
<td>2 weeks (6 hours per day, 5 days per week)</td>
<td>2 credit units</td>
</tr>
<tr>
<td>BIO 707</td>
<td>Cell Dynamics, Stem Cells and Developmental Biology</td>
<td>2 weeks (6 hours per day, 5 days per week)</td>
<td>2 credit units</td>
</tr>
<tr>
<td>BIO 708</td>
<td>Cell Biology</td>
<td>2 weeks (6 hours per day, 5 days per week)</td>
<td>2 credit units</td>
</tr>
<tr>
<td>BIO 709</td>
<td>Genetics and Evolution</td>
<td>2 weeks (6 hours per day, 5 days per week)</td>
<td>2 credit units</td>
</tr>
</tbody>
</table>

**Critical Analysis of the Scientific Literature**

*BIO 700*

This fifteen-week seminar series provides an intensive experience in critical reading, thinking, and proposal writing, and introduces predoctoral researchers to fundamental concepts in modern molecular biology. Predoctoral researchers read and critique papers from a range of different disciplines, and learn to present their ideas and opinions in a constructive, organized and rigorous manner. Following a brief introduction on relevant background information pertinent to a paper, predoctoral researchers are expected to read and discuss the paper, and to prepare a short essay describing the major research question and future directions they might take if working in that field. In addition, each predoctoral researcher leads the group in a discussion of future research directions.

**Transcription and Chromatin**

*BIO 701*

The focus of this module is on the functions of chromatin and mechanisms underlying the regulation of the transcription of eukaryotic genes by RNA polymerase II. In particular, the mechanisms of action and the roles of both the transcription machinery and chromatin regulatory factors in this process are examined. Through reading and discussion of scientific literature, predoctoral researchers learn (i) how RNA polymerase II and its cognate transcription factors function together to regulate synthesis of messenger and other RNAs; and (ii) how chromatin remodeling and modifying enzymes control gene expression through their function on chromatin structure.

In addition to the lecture and reading/discussion portions, there is a hands-on experimental component that highlights some of the topics discussed. In this section, predoctoral researchers focus on basic biochemical and molecular methods used in the transcription chromatin field. The predoctoral researchers learn about i) column chromatography, protein separation and detection; ii) transcription
factor purification and enzymology; iii) study of gene expression via Northern analysis; and iv) Chromatin Immunoprecipitation (ChIP) and analysis by polymerase chain reaction (PCR).

*Genomic and Computational Approaches to Understanding Gene Expression*  
**BIO 702**

Regulation of eukaryotic transcription is a complex process involving interactions between transcription factors, RNA polymerase, chromatin structure and chromatin remodeling enzymes. With the rise of genomics and computational approaches, these factors can be mapped at the genome-wide level *in vivo*, and correlated with transcript levels and splicing events to reveal surprising insights into the mechanisms of transcription. In this module, predoctoral researchers learn to develop biological hypotheses that are testable by genomic methods, understand available experimental techniques and concepts for analysis, and critically evaluate the obtained results. A problem-driven approach is used to analyze particular sets of high through put data, discuss and implement appropriate analysis tools, and learn how to display and interpret the results. In order to enable all predoctoral researchers to more fully participate in the process, instruction of basic knowledge in UNIX, R, and statistics is interspersed. Furthermore, journal clubs with mandatory participation help the predoctoral researchers to understand how genomic methods have successfully been used to address important biological problems in transcription and splicing. The module provides both a conceptual framework and practical skills for using genomic methods in future research.

*Proteomic Approaches to Understanding the Architecture of Protein Complexes*  
**BIO 703**

This module focuses on the practical aspects of state-of-the-art proteomics and the analysis of protein complexes. A lecture component introduces predoctoral researchers to the basics of proteomics and protein mass spectrometry (MS), quantitative proteomics, and affinity purification of protein complexes. The laboratory component consists of purifying a protein complex from cell culture or yeast; digesting the affinity purified complex; assembling, packing, and loading micro-capillary columns; and separating the digested peptides by multidimensional chromatography coupled to tandem mass spectrometry. The resulting MS datasets are analyzed using the SEQUEST algorithm. The data is assembled, compared, and quantified using established proteomic analysis tools. The predoctoral researchers participate in journal club sessions and discuss published works of particular technological significance or biological application. The predoctoral researchers keep a detailed electronic notebook of their research throughout the module.

*Fundamentals in Light Microscopy and Live 3D Cell and Embryo Imaging*  
**BIO 704**

The goal of this module is for predoctoral researchers to learn the fundamentals of image collection, processing, and dissemination using current practical applications. The format of the module is a combination of lectures, hands-on imaging and image processing sessions, critical paper reviews, and discussions of techniques. Prior to the module, predoctoral researchers must have completed orientation on widefield and confocal microscopes from the Stowers Institute’s Microscopy Center. Lectures introducing concepts and topics in microscopy (from basic to emerging techniques) are accompanied by hands-on imaging of a wide variety of samples using a variety of techniques. Examples of advanced imaging techniques that are covered are microdissection techniques, multispectral imaging, quantitative imaging, spinning disk imaging, colocalization, fluorescence recovery after photobleaching (FRAP), fluorescence resonance energy transfer (FRET), super-resolution/deconvolution microscopy, electron microscopy, and fluorescence in situ hybridization (FISH). Image acquisition is followed by image processing. Image processing is introduced using basic tutorials for image measurements, 3D image processing, and publication quality figure preparation. A discussion of image presentation ethics is included to ensure that the highest ethical standards are met when processing data. The module
concludes with presentations by the predoctoral researchers and discussion of the data acquired in the previous weeks.

**Cell Dynamics, Stem Cells and Developmental Biology**  
*BIO 707*

The objective of this module is to gain theoretical knowledge and practical experience in modern developmental biology principles and techniques as they apply to whole organism development. This integrated module covers the dynamic cellular and morphogenetic processes involved in embryological development of organisms and their reiterated use in stem cell biology and regeneration. Introductory lectures are followed by in-depth analysis of some of the classical work on these topics. The goal is to help predoctoral researchers develop a clear understanding of the key questions addressed in this area of research, the basic approaches and useful experimental models, and the unsolved mysteries for future scientists. With an emphasis on mouse and zebrafish model organisms, this module covers the development and genetics of each species and the processes of cell migration and tissue morphogenesis; epithelial-mesenchymal transformation; musculoskeletal development; placode and sensory system development; and organogenesis and the signaling pathways that govern them. A central component of this module is practical experience in embryo manipulation and gain- and loss-of-function techniques for analyzing true *in vivo* gene function during embryogenesis. Each of these cell and developmental biology topics provides the basis for understanding the importance and regulation of stem cells and their applications to disease and regeneration.

**Cell Biology**  
*BIO 708*

This module covers two main topics: (1) cellular dynamics and (2) cell signaling/cell-to-cell communication. Cellular dynamics covers several topics including cytoskeleton dynamics and regulation; symmetry breaking and establishment of cell polarity; cell motility and directional migration; and cell division. Cell signaling and cell-to-cell communication examines key signaling pathways used by cells to modulate their behavior and function in response to environmental cues and developmental processes with an emphasis on the biochemical and genetic components that define such signaling events.

A wide range of cell biological processes are common among all cells, however there are features that are unique to specific organ systems. The nervous system is featured to illustrate general principles common to all cell types as well as cellular specialization. The goal is to study the relationship between structure and function of the nervous system. In addition to conceptual issues, basic technical issues are discussed to facilitate reading and understanding of the literature.

The module features introductory lectures followed by in-depth reading and analysis of some of the classical as well as up-and-coming work on these topics.

**Genetics and Evolution**  
*BIO 709*

The goal of this module is to introduce predoctoral researchers to sophisticated concepts in both genetics and evolutionary biology. In terms of genetics, specific attention is paid to the nature and execution of genetic screens, the nature of enhancement and suppression, and the complementation test. The molecular mechanisms of inheritance are the basis of evolution. Lectures and reading of the primary literature feature invertebrate and vertebrate metazoan model organisms. Molecular processes, such as signaling, and the diversity of cell types are discussed in a larger context across species. Evolutionary concepts include both a classical evolutionary prospect as well as modern DNA sequence-mediated approaches to understanding the origin of variation within and between species. There is a strong emphasis on using modern experimental methods to address those questions.
The module includes lecture, reading and analysis of journal articles, and hands-on laboratory components. The laboratory components expose predoctoral researchers to a subset of classical genetic methods discussed during the other portions of the module using model organisms (such as *Drosophila melanogaster*, *Saccharomyces cerevisiae*, and potential other model systems, as well).

**Laboratory Rotations Requirement**

Predoctoral researchers participate in three consecutive two-month rotations in labs of their choice. Each rotation immerses predoctoral researchers in the research program of a single laboratory where he or she addresses a specific research question under the direction of an advisor and senior laboratory staff. Predoctoral researchers are expected to fully commit to the rotation lab and to successfully complete a short-term research project requiring substantial experimental effort. As a result of these three rotations, predoctoral researchers are in a position to enter a thesis laboratory, with consent of the principal investigator. While the primary focus during laboratory rotations is on research work, predoctoral researchers are also expected to attend lab meetings, seminars, and journal clubs.

Predoctoral researchers are expected to work in the lab at least 40 hours per week. Each rotation is an 800-level course for 6 credit units, for a total of 18 credit units for the term.

<table>
<thead>
<tr>
<th>Course</th>
<th>Rotation</th>
<th>Weeks</th>
<th>Credit Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO 801-840</td>
<td>Laboratory Rotation I</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>BIO 801-840</td>
<td>Laboratory Rotation II</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>BIO 801-840</td>
<td>Laboratory Rotation III</td>
<td>8</td>
<td>6</td>
</tr>
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</table>

**Thesis Research Requirement**

Predoctoral researchers begin their thesis research in June of the first year. They are expected to develop and execute a research project that addresses a significant biological question to satisfy the requirements of a Ph.D. degree. Following successful completion of the Assessment, predoctoral researchers devote the remainder of their time in the program to laboratory research. They are also expected to participate in lab meetings, seminars, and journal clubs.

The thesis laboratory is a 900-level course for 12 credit units for a fall term, 18 credit units for a spring term, and 6 credit units for a summer term, for a total of 36 credit units per year (fall, spring and summer terms).

Thesis laboratory research continues until the predoctoral researcher has defended a thesis through an open seminar and is examined by the Supervisory Committee.

**Supervisory Committees** are formed after the predoctoral researcher enters the thesis lab in June of the first year. Each Supervisory Committee is comprised of a minimum of four faculty members, one of whom is the thesis research advisor. The remaining members (at least one of whom is an Investigator or Associate Investigator at the Stowers Institute) are appointed by the thesis advisor and predoctoral researcher and approved by the Dean. One of the committee members may be faculty from outside the SIMR. The Supervisory Committee directly supervises a predoctoral researcher’s progress toward the thesis and administers the Assessment. The predoctoral researcher needs to notify the Associate Dean for Administration & Registrar of the committee members by October 1st of the second year. The
Graduate School office covers the costs for the travel, meals, and accommodation for the Supervisory Committee member who is from outside SIMR.

**Ph.D. Sample Plan of Study**
Entering Fall 2016

**Fall - Year 1**

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<td>Genetics and Evolution</td>
<td>2</td>
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**TOTAL HOURS FALL 2016** 18

**Spring - Year 1**

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO 810</td>
<td>Rotation Lab- Hawley, S</td>
<td>6</td>
</tr>
<tr>
<td>BIO 833</td>
<td>Rotation Lab- Sanchez, A</td>
<td>6</td>
</tr>
<tr>
<td>BIO 822</td>
<td>Rotation Lab- Si, K</td>
<td>6</td>
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**TOTAL HOURS SPRING 2017** 18

**Summer - Year 1**

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO 910.1</td>
<td>Thesis Lab- Hawley, S</td>
<td>6</td>
</tr>
</tbody>
</table>

**Fall - Year 2**

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>BIO 910.2</td>
<td>Thesis Lab- Hawley, S</td>
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</table>

**Spring - Year 2**

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO 910.3</td>
<td>Thesis Lab- Hawley, S</td>
<td>18</td>
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</table>

**Summer - Year 2**

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>BIO 910.1</td>
<td>Thesis Lab- Hawley, S</td>
<td>6</td>
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<tr>
<td>Year</td>
<td>Course Number</td>
<td>Course Title</td>
</tr>
<tr>
<td>-------</td>
<td>---------------</td>
<td>----------------------------</td>
</tr>
<tr>
<td>3</td>
<td>BIO 910.2</td>
<td>Thesis Lab- Hawley, S</td>
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<tr>
<td></td>
<td>BIO 910.3</td>
<td>Thesis Lab- Hawley, S</td>
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<td>Thesis Lab- Hawley, S</td>
</tr>
<tr>
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<td>Thesis Lab- Hawley, S</td>
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<tr>
<td></td>
<td>BIO 910.3</td>
<td>Thesis Lab- Hawley, S</td>
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<tr>
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<td>BIO 910.1</td>
<td>Thesis Lab- Hawley, S</td>
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<td>5</td>
<td>BIO 910.2</td>
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<td>Thesis Lab- Hawley, S</td>
</tr>
<tr>
<td></td>
<td>BIO 910.1</td>
<td>Thesis Lab- Hawley, S</td>
</tr>
</tbody>
</table>

**TOTAL HOURS COMPLETED:** 186
Assessment Requirement

Overview:
Within the first three years of their program, predoctoral researchers undergo an Assessment, which consists of a written thesis proposal and an oral presentation. The primary aim of the Assessment is to provide the predoctoral researcher with an invaluable opportunity to receive intensive and constructive feedback in order to strengthen his or her thesis proposal.

The written proposal should be conceived with input from the predoctoral researcher’s thesis advisor, but should represent the predoctoral researcher’s own long-term plan. The written proposal should contain the specific aims of the research, detailed background, preliminary data, and planned experimental approaches for the thesis project being pursued or a closely related project. (If the predoctoral researcher plans to present a closely related project that he or she is not intending to pursue, the predoctoral researcher must obtain approval from his or her thesis advisor and Supervisory Committee.) An additional part of the proposal is a brief summary (two to three pages, double spaced) of the objectives for the meeting, similar to what is prepared for any Supervisory Committee meeting.

The oral component of the Assessment includes the discussion of the project with the Supervisory Committee. The thesis advisor should be present for the discussion of the project but may not be present when the Supervisory Committee votes on a grade of Pass or Fail.

Preparing for the Assessment:
Predoctoral researchers are expected to fully prepare for this Assessment, and failure to adequately do so will require a second Assessment. Failure to adequately prepare for a second Assessment is grounds for dismissal from the program.

To schedule the Assessment, the predoctoral researcher works with the Graduate School’s administrative coordinator to find a date and time when all Supervisory Committee members are able to attend. Three (3) hours should be allowed for the Assessment, and the administrative coordinator will arrange a conference room and appropriate catering for the meeting. GSSIMR’s administrative coordinator will arrange travel for the outside committee member and coordinate preparations with the lab’s administrative assistant.

Each Supervisory Committee determines and tells the predoctoral researcher how far in advance of the Assessment they want to receive the written proposal and brief summary to have time to read all of it prior to the Assessment. If this information is not conveyed to the predoctoral researcher, the thesis must be turned into the Supervisory Committee members NO LATER than 5 full days prior to the Assessment.

The written portion is 5-10 pages long, single space. It is written like an NIH proposal with Introduction, Specific Aims, Background and Significance, Preliminary Data, and Planned Experimental Approaches to address each Aim (http://www.niaid.nih.gov/researchfunding/grant/pages/appsamples.aspx). The written portion should contain clearly labeled figures and be carefully checked for spelling and grammatical errors. Some amount of time and effort needs to be applied to make an optimal proposal. It should be written by the predoctoral researcher, but can be revised with the aid of the thesis advisor and other members of the lab. An additional part of the proposal is a brief summary (two to three
pages, double spaced) of the objectives for the meeting, similar to what is prepared for any Supervisory Committee meeting.

**The Assessment:**
The Assessment is scheduled for three hours. The oral presentation component of the Assessment is 20-30 minutes long and followed by extensive discussion. The presentation is less general than a Friday Science Club talk, but less specific than a lab meeting. It should be revised and practiced with the thesis advisor and other lab members.

The predoctoral researcher takes to the meeting a blank copy of the Assessment Report document. At the beginning of the meeting, one committee member (not the advisor) is appointed as chair of the committee to complete the Assessment Report. After the oral presentation, all committee members sign one copy of the Assessment Report, and the chair sends that in interoffice mail to the Associate Dean for Administration & Registrar. Within a week of the Assessment, the chair completes a blank form, emails it to the Associate Dean for Administration & Registrar and copies all committee members, and attaches a copy of the written proposal.

**Other Educational Requirements**

*Lecture Series and Seminars*

Predoctoral researchers are expected to attend the SIMR Lecture Series. The Lecture Series brings renowned scientists from around the world to SIMR to give talks about a variety of scientific topics. The advisor may require a predoctoral researcher to attend other seminars throughout the year. No credit units are offered for attending seminars.

*Science Club*

Predoctoral researchers are expected to attend a weekly Science Club where the Institute’s junior scientists present their research. Predoctoral researchers are required to present at least one time (and preferably more) during their tenure in the lab. No credit units are offered for attending Science Club.

*Laboratory Safety, Radiation Safety, and Biosafety Level 2 Trainings* (12 hours)

These laboratory safety training sessions occur early in the program and consist of lectures and a tour. SIMR, while maintaining regulatory compliance with several federal, state and local agencies, has the responsibility to provide a safe and healthy working environment for all individuals associated with the Stowers Institute and to minimize the environmental impact of performing basic medical research. These courses are designed to give predoctoral researchers the tools necessary to conduct science in a safe manner at the Stowers Institute by discussing the regulatory requirements of OSHA, EPA, MDNR, NRC, and other regulatory agencies and applying them to real research scenarios. No credit units are offered for these trainings.

*Research Integrity Course* (9 weeks; 1 hour per day, 1 day per week)

Predoctoral researchers are required to complete the SIMR Research Integrity Course during their first year. The course uses select case studies to encourage predoctoral researchers to think about the principles of research integrity; to appreciate the devastating effect of scientific misconduct on public trust, institutional reputation, and individual careers; and to understand why the Stowers Institute has zero tolerance for material deviation from commonly accepted standards for proposing, conducting, and reporting research.
Each class focuses on a case study that illustrates basic principles of research integrity. Predoctoral researchers are expected to read a case study and a provided summary of the facts of each case before each class, and to actively participate in classroom discussion. No credit units are offered for taking the Research Integrity Course.

**Other Educational Opportunities**

*Scientific Meetings*
GSSIMR pays the travel expenses for predoctoral researchers to attend one scientific meeting or course each year.

*Teaching*
Predoctoral researchers with an interest in teaching may, with their thesis advisor’s consent, serve as teaching assistants either in the first-term modules or in courses taught by faculty. However, teaching is not a requirement of the program, and no credit units are available for teaching.

**Program Completion Requirements**
The completion of a body of research that addresses a significant biological problem and is likely to result in at least one publication in a high-impact journal is required for the successful completion of the Ph.D. research program. The publication(s) forms the main body of a thesis. A detailed literature review precedes the thesis and a discussion of the possible next steps in the research follows the thesis.

To defend the thesis, a predoctoral researcher presents an open seminar and subsequently is examined by the Supervisory Committee. Satisfactory defense of the thesis and fulfillment of all requirements of GSSIMR results in the granting of the Ph.D. degree in Biology.

To schedule the Thesis Defense, the predoctoral researcher works with the Graduate School’s administrative coordinator to find a date and time when all Supervisory Committee members are able to attend. Four hours should be allowed for the Thesis Defense: one hour for the open seminar followed by three hours for examination by the Supervisory Committee. The Graduate School’s administrative coordinator will arrange appropriate conference room(s) and catering for the meeting. GSSIMR’s administrative coordinator will arrange travel for the outside committee member and coordinate preparations with the lab’s administrative assistant.

Each Supervisory Committee determines and tells the predoctoral researcher how far in advance of the Thesis Defense they want to receive the thesis so they have adequate time to read and review the document. If this information is not conveyed to the predoctoral researcher, the thesis must be turned into the Supervisory Committee members NO LATER than 7 full days prior to the defense.
EVALUATION

Predoctoral researchers are expected to develop and execute a research project that addresses a significant biological question, which will result in a Ph.D. in Biology, within approximately five years from matriculation. The minimum requirements for successful completion of the Ph.D. program at GSSIMR are the attendance of all modules, successful completion of 114 credit units (although a predoctoral researcher completing five years of study and research will have a total of 186 hours), a written thesis on original research, and the defense of the written thesis. No credit is given for hours earned at another institution. No course may be taken for credit more than once.

Grading Scale:
P: Passing
   Equivalent to a grade of 70% or above.
F: Failing
   Equivalent to a grade of less than 70%.

Two failing grades in the graduate program is grounds for dismissal. Prior to receiving a failing grade, the predoctoral researcher will be notified by the instructor and/or Associate Dean for Academic Affairs that they are in jeopardy of not passing. During this conference the predoctoral researcher will be counseled as to what they need to do in order to successfully complete the course. The instructor and/or Associate Dean for Academic Affairs will schedule a follow-up meeting in order to evaluate progress. Every reasonable effort will be made to assist the predoctoral researchers in their success.

Attendance Policy
To meet the goals of the program, predoctoral researchers are expected to comply with GSSIMR’s policies, fully participate in all phases of the research program, and maintain an acceptable time and attendance record. A predoctoral researcher who is unable to meet the time and attendance standard must notify the Graduate School office in advance of the tardiness or absence. With prior approval from the advisor and the Graduate School office, a predoctoral researcher may take personal days, the number of which will be determined by the predoctoral researcher’s need. Excessive absences or late arrivals may be grounds for dismissal from the program. As defined by the general attendance policy, “In general, absences will be considered excessive when the absentee rate is 3% or greater. For calculating the absentee or late arrival rate, absences will not count if they are authorized.” Authorized absences for predoctoral researchers include, but are not limited to, FMLA absences, vacation leave, jury duty leave, or approved unpaid leave.

Module Attendance for Predoctoral Researchers:
Predoctoral researchers are required to attend all portions of all modules. The required times will be distributed in the schedules that accompany the syllabus. These will include:

1) Lectures, both in-class and Wednesday seminars and Friday Science Clubs
2) Journal clubs
3) Laboratory sessions, both the scheduled time as well as any extra time that may be necessary to complete the work. If finished early, predocs may be dismissed by the laboratory instructors.

Any absence needs to be cleared by the lead faculty of that module prior to the absence either through email or in person. Reasons must be stated and approval may be denied. Exceptions to this policy are made for emergencies where it may not be possible to contact faculty ahead of time. In those cases, predocs are encouraged to contact the faculty and/or the Graduate School as they are able. Unexcused
absences for non-emergency reasons will be referred to the Associate Dean for Academic Affairs for subsequent action.

See the Attendance Policy in the GSSIMR Policy Manual for the complete policy.

**Introductory Modules**
Each module’s faculty evaluates a predoctoral researcher’s performance with a Pass/Fail decision and provides a written evaluation of the work to the Dean and the Associate Dean for Administration & Registrar.

**Laboratory Rotations**
Prior to each rotation, the predoctoral researcher communicates with the rotation advisor/advisor’s lab and subsequently writes a paragraph that outlines the project, goals, and expectations to accomplish during his/her rotation. Following the approval by the rotation advisor (PI), the predoctoral researcher submits the approved paragraph to the Associate Dean for Administration & Registrar for the committee. At the end of each rotation, the predoctoral researcher and advisor complete the Rotation Lab Report. The predoctoral researcher writes a paragraph to summarize the project and what he/she learned and accomplished during the rotation, then forwards the report to the advisor. The advisor writes a paragraph to explain how well the predoctoral researcher executed the project, and provides a grade of Pass or Fail. The advisor submits the report to the Associate Dean for Administration & Registrar who assembles all reports for the committee. Toward the end of each rotation, the predoctoral researcher makes a presentation to the lab. At the end of the second rotation, each predoctoral researcher makes a brief presentation to the Rotation Committee on what he/she performed and accomplished in one of the first two rotations and answers queries raised by the committee members. This presentation is a shortened version of the predoctoral researcher’s presentation to their rotating lab. The Rotation Committee assigns grades for the presentations and provides those to the Dean.

**Thesis Research**
Three times a year (at the end of each term), the Graduate School office provides a Term Report template to the predoctoral researcher and thesis advisor to complete. The predoctoral researcher provides a paragraph to explain the project(s) and the progress made on the project(s) within the term. The thesis advisor provides a paragraph in response to the predoctoral researcher’s project summary and evaluates the predoctoral researcher’s performance with a Pass/Fail decision. The thesis advisor submits the completed form to the Associate Dean for Administration & Registrar.

Predoctoral researchers are required to meet with their Supervisory Committee once a year (and generally meet with them twice a year) to give an oral presentation of their progress. This includes some background and recap of previous meeting(s). The objective of the Supervisory Committee meetings is to evaluate the predoctoral researcher’s progress and provide recommendations and feedback on their project(s).

Scheduling of the meetings is done by the predoctoral researcher and thesis advisor, at times of year that are agreed upon in advance by the committee members. The predoctoral researcher informs the Graduate School office of the meeting at the time it is scheduled, and the Graduate School office assists with meeting arrangements.
Two to three days prior to the Supervisory Committee meeting, the predoctoral researcher sends to the committee members a brief (two to three pages, double spaced) summary of the objectives for the meeting, whether it be help with one particular aspect of a project, review of soon-to-be published material, or readiness to defend a thesis. This summary includes a recap of the previous meeting and the progress that has been made since that meeting.

**Assessment**
Within the first three years of their program, predoctoral researchers undergo an Assessment, which consists of a written thesis proposal and an oral presentation. The primary aim of the Assessment is to provide the predoctoral researcher with an invaluable opportunity to receive constructive feedback in order to strengthen his or her proposal. The Supervisory Committee for each predoctoral researcher reviews the written proposal and hears the oral component of the Assessment. The Supervisory Committee conducts a discussion with the predoctoral researcher regarding the project. The Supervisory Committee votes on a grade of Pass or Fail.

**Program Completion Requirements**
The minimum requirements for successful completion of the Ph.D. program at GSSIMR are the attendance of all modules, successful completion of a minimum of 114 credit units (although a predoctoral researcher completing five years of study and research will have a total of 186 hours), a passing grade on the Assessment, a written thesis on original research, and the defense of the written thesis.
MASTER’S OF SCIENCE IN BIOLOGY DEGREE PROGRAM

GSSIMR recruits, admits and enrolls predoctoral researchers exclusively for the Ph.D. program. GSSIMR does not recruit, admit or enroll predoctoral researchers whose primary objective is a master’s degree. However, in certain cases, GSSIMR will confer a Master’s of Science (M.S.) degree in Biology to predoctoral researchers who, for various reasons and circumstances, elect not to complete the Ph.D. degree. Circumstances under which a predoctoral researcher could revise their enrollment include, but are not limited to, changes in marital status; changes in parental status; caretaking of a parent, sibling, spouse or child; health issues; and other life changing events.

As with the Ph.D. program, the M.S. program stresses critical thinking and the rapid development of experimental prowess. The program also focuses on in-depth understanding of the latest methodologies and approaches.

Requirements for M.S. Degree
The requirements for the master’s degree include all of the introductory module requirements, lab rotation requirements and at least one year of thesis research as defined for the Ph.D. program (72 credits) and includes the successful completion of the Assessment, a written thesis describing research work completed to date, a written evaluation by the thesis advisor and a majority vote of the Supervisory Committee.

Predoctoral researchers must receive written permission from the Supervisory Committee, in consultation with the Dean, prior to pursing a master’s degree.

Introductory Modules
The following modules are required for the M.S. degree. A complete list of modules with descriptions can be found in other sections of this Handbook. Module courses are subject to some modifications from year to year by the Curriculum Committee. Below is a list of the modules offered in the fall of 2016.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Duration</th>
<th>Credit Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO 700</td>
<td>Critical Analysis of the Scientific Literature</td>
<td>15 weeks</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2 ½ hours per day, 2 days per week)</td>
<td></td>
</tr>
<tr>
<td>BIO 701</td>
<td>Transcription and Chromatin</td>
<td>2 weeks</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(6 hours per day, 5 days per week)</td>
<td></td>
</tr>
<tr>
<td>BIO 702</td>
<td>Genomic and Computational Approaches to Understanding Gene Expression</td>
<td>2 weeks</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(6 hours per day, 5 days per week)</td>
<td></td>
</tr>
<tr>
<td>BIO 703</td>
<td>Proteomic Approaches to Understanding the Architecture of Protein Complexes</td>
<td>2 weeks</td>
<td>2</td>
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<tr>
<td></td>
<td></td>
<td>(6 hours per day, 5 days per week)</td>
<td></td>
</tr>
<tr>
<td>BIO 704</td>
<td>Fundamentals in Light Microscopy and Live 3D Cell and Embryo Imaging</td>
<td>2 weeks</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(6 hours per day, 5 days per week)</td>
<td></td>
</tr>
<tr>
<td>BIO 707</td>
<td>Cell Dynamics, Stem Cells and Developmental Biology</td>
<td>2 weeks</td>
<td>2</td>
</tr>
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<td></td>
<td></td>
<td>(6 hours per day, 5 days per week)</td>
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</tr>
<tr>
<td>BIO 708</td>
<td>Cell Biology</td>
<td>2 weeks</td>
<td>2</td>
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<tr>
<td></td>
<td></td>
<td>(6 hours per day, 5 days per week)</td>
<td></td>
</tr>
<tr>
<td>BIO 709</td>
<td>Genetics and Evolution</td>
<td>2 weeks</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(6 hours per day, 5 days per week)</td>
<td></td>
</tr>
</tbody>
</table>
**Laboratory Rotations Requirement**
Predoctoral researchers participate in three consecutive two-month rotations in labs of their choice. Each rotation immerses predoctoral researchers in the research program of a single laboratory where he or she addresses a specific research question under the direction of an advisor and senior laboratory staff. Predoctoral researchers are expected to fully commit to the rotation lab and to successfully complete a short-term research project requiring substantial experimental effort. As a result of these three rotations, predoctoral researchers are in a position to enter a thesis laboratory, with consent of the principal investigator. While the primary focus during laboratory rotations is on research work, predoctoral researchers are also expected to attend lab meetings, seminars, and journal clubs.

Predoctoral researchers are expected to work in the lab at least 40 hours per week. Each rotation is an 800-level course for 6 credit units, for a total of 18 credit units for the term.

<table>
<thead>
<tr>
<th>Course</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO 801-840</td>
<td>Laboratory Rotation I</td>
<td>6 credit units</td>
</tr>
<tr>
<td>BIO 801-840</td>
<td>Laboratory Rotation II</td>
<td>6 credit units</td>
</tr>
<tr>
<td>BIO 801-840</td>
<td>Laboratory Rotation III</td>
<td>6 credit units</td>
</tr>
</tbody>
</table>

**Thesis Research Requirement**
Predoctoral researchers begin their thesis research in June of the first year. They are expected to develop and execute a research project that addresses a significant biological question to satisfy the requirements of a master’s degree. Following successful completion of the Assessment, predoctoral researchers devote the remainder of their time in the program fully to laboratory research. They are also expected to participate in lab meetings, seminars, and journal clubs.

The thesis laboratory is a 900-level course for 12 credit units for a fall term, 18 credit units for a spring term, and 6 credit units for a summer term, for a total of 36 credit units per year (fall, spring and summer terms).

Thesis laboratory research continues until the predoctoral researcher has completed a written thesis describing research work completed, a written evaluation by the thesis advisor and a majority vote of the Supervisory Committee.

**M.S. Sample Plan of Study**
Entering Fall 2016

<table>
<thead>
<tr>
<th>Course Number</th>
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</tr>
<tr>
<td>BIO 703</td>
<td>Proteomic Approaches to Understanding the Architecture of Protein Complexes</td>
<td>2</td>
</tr>
</tbody>
</table>
The predoctoral researcher consults with the Dean and then submits a formal request to their Supervisory Committee to pursue the M.S. program due to unforeseen change in personal circumstances. Permission granted.

A predoctoral researcher must successfully complete the Assessment and a written thesis describing research work completed to date, and successfully obtain a written evaluation by the thesis advisor and a majority vote of the Supervisory Committee. Additional hours might be needed which would be determined by thesis advisor, the Supervisory Committee and the Dean.

**Assessment Requirement**

**Overview:**
Within the first three years of their program, predoctoral researchers undergo an Assessment, which consists of a written thesis proposal and an oral presentation. The primary aim of the Assessment is to provide the predoctoral researcher with an invaluable opportunity to receive constructive feedback in order to strengthen his or her proposal.

The written proposal may be conceived with the assistance of the thesis advisor, but should represent the predoctoral researcher’s own plan. The written proposal should contain the specific aims of the
research, detailed background, preliminary data, and planned experimental approaches for the thesis project being pursued or a closely related project (as determined in consultation with the predoctoral researcher’s thesis advisor). An additional part of the proposal is a brief summary (two to three pages, double spaced) of the objectives for the meeting, similar to what is prepared for any Supervisory Committee meeting.

The oral component of the Assessment includes the discussion of the project with the Supervisory Committee. The thesis advisor should be present for the discussion of the project but may not be present when the Supervisory Committee votes on a grade of Pass or Fail.

Preparing for the Assessment:
Predoctoral researchers are expected to fully prepare for this Assessment, and failure to adequately do so will require a second Assessment. Failure to adequately prepare for a second Assessment is grounds for dismissal from the program.

To schedule the Assessment, the predoctoral researcher works with the Graduate School's administrative coordinator to find a date and time when all Supervisory Committee members are able to attend. Three hours should be allowed for the Assessment, and the administrative coordinator will arrange a conference room and appropriate catering for the meeting. GSSIMR’s administrative coordinator will arrange travel for the outside committee member and coordinate preparations with the lab’s administrative assistant.

Each Supervisory Committee determines and tells the predoctoral researcher how far in advance of the Assessment they want to receive the written proposal and brief summary to have time to read all of it prior to the Assessment.

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Science Club

Predoctoral researchers are expected to attend a weekly Science Club where the Institute’s junior scientists present their research. Predoctoral researchers are required to present at least one time (and preferably more) during their tenure in the lab. No credit units are offered for attending Science Club.

Laboratory Safety, Radiation Safety, and Biosafety Level 2 Trainings (12 hours)

These laboratory safety training sessions occur early in the program and consist of lectures and a tour. SIMR, while maintaining regulatory compliance with several federal, state and local agencies, has the responsibility to provide a safe and healthy working environment for all individuals associated with SIMR and to minimize the environmental impact of performing basic medical research. These courses are designed to give predoctoral researchers the tools necessary to conduct science in a safe manner at the Stowers Institute by discussing the regulatory requirements of OSHA, EPA, MDNR, NRC, and other regulatory agencies and applying them to real research scenarios. No credit units are offered for these trainings.

Research Integrity Course (9 weeks; 1 hour per day, 1 day per week)

Predoctoral researchers are required to complete the SIMR Research Integrity Course during their first year. The course uses select case studies to encourage predoctoral researchers to think about the principles of research integrity; to appreciate the devastating effect of scientific misconduct on public trust, institutional reputation, and individual careers; and to understand why the Stowers Institute has zero tolerance for material deviation from commonly accepted standards for proposing, conducting, and reporting research.

Each class focuses on a case study that illustrates basic principles of research integrity. Predoctoral researchers are expected to read a case study and a provided summary of the facts of each case before each class, and to actively participate in classroom discussion. No credit units are offered for taking the Research Integrity Course.

Other Educational Opportunities

Scientific Meetings

GSSIMR pays the travel expenses for predoctoral researchers to attend one scientific meeting or course each year.

Teaching

Predoctoral researchers with an interest in teaching may, with their thesis advisor’s consent, serve as teaching assistants either in the first-term modules or in courses taught by faculty.
However, teaching is not a requirement of the program, and no credit units are available for teaching.
FINANCIAL SUPPORT

GSSIMR is committed to giving each predoctoral researcher the best research experience in an unrivaled research environment. Therefore, GSSIMR provides a highly competitive salary throughout the program for each predoctoral researcher in good standing, does not charge tuition for the graduate program, purchases a laptop and necessary textbooks for each predoctoral researcher, and covers all costs of instruction and research. The amount of the salary is reviewed annually to ensure it remains competitive. As the Ph.D. program requires full time and effort, a predoctoral researcher may not supplement the income from other sources unless a written agreement to do so is obtained in advance from the Graduate School office. Living expenses during the Ph.D. program are the predoctoral researcher’s responsibility.

BENEFITS

In addition to the competitive salary, GSSIMR provides the following insurance benefits, effective on the first day of the program: medical, pharmacy, vision, dental, basic life insurance, and accidental death and dismemberment. Predoctoral researchers are eligible to participate in the Stowers Group 403 (b) Plan. GSSIMR also provides the predoctoral researchers with travel and conference allowances, a laptop computer, and assistance with English language proficiency (if needed).

RELOCATION

GSSIMR provides a predoctoral researcher with financial assistance for eligible moving expenses to enable him or her to move from the previous city of residence to the Kansas City area. Upon arrival in Kansas City, a predoctoral researcher is provided with up to three weeks of transitional housing accommodations while he or she arranges to move into his or her own housing.

ASSISTANCE WITH SCIENTIFIC WRITING

Many of the module courses require predoctoral researchers to provide evidence of their understanding through written documentation. Some predoctoral researchers may find this aspect of science challenging, for reasons such as not being a native English speaker or not having much experience in scientific writing before starting the program. Therefore, support is provided by GSSIMR in the form of a consultant. The consultant works directly with the predoctoral researcher on his/her assignments by e-mail and/or face-to-face, depending on the needs of the predoctoral researcher. With the approval of a module instructor, predoctoral researchers requiring this additional support are given additional time (from a few days to up to one week) to complete an assignment. Any predoctoral researcher who has concerns about scientific writing should discuss those concerns with the Associate Dean for Academic Affairs who may make arrangements with the consultant.

GSSIMR, in consultation with the predoctoral researcher’s thesis advisor and the Dean, may also support subsequent requests for editorial assistance.

FACILITIES AND EQUIPMENT

GSSIMR is housed on the 10-acre campus of SIMR in the heart of Kansas City, Missouri. Lectures occur in conference and seminar rooms in the 600,000 square-foot facility, and laboratory work takes place in various laboratories and core facilities.

The SIMR campus is regarded as one of the most technologically advanced biomedical research facilities ever built. Predoctoral researchers conduct research in laboratories and scientific support facilities that
contain basic, common research supplies and equipment as well as specialized equipment as needed by that laboratory or facility. Scientists also share equipment that is housed in common research areas.

SIMR’s support facilities encourage collaboration among scientists and foster efficiency in research. Each facility is headed by an expert in the field who works with research teams to offer access to the latest technology and techniques.

GSSIMR’s administrative offices are in a central location within the Research Buildings. The area contains a comfortable space with wireless access in which predoctoral researchers can meet, exchange ideas, and socialize. Also in the area are a kitchenette for snacks and beverages, a conference room, a place to practice scientific talks, and a work room with printers and office supplies.

Predoctoral researchers may exercise in the SIMR fitness center, which is open 24 hours per day. Also available to predoctoral researchers are indoor and outdoor recreation, such as volleyball, basketball, bocce ball, badminton, yoga and Zumba. Predoctoral researchers may walk through or relax in the fountain garden on the west side of the campus. In addition to the on-site recreation opportunities, predoctoral researchers are invited to participate in the annual Corporate Challenge activities with the Stowers Group of Companies (SGC). Started in 1980, the Kansas City Corporate Challenge is an Olympic-type event that allows Kansas City area corporations to interact with each other through a variety of sporting events.

The Stowers Café offers subsidized meals and a diverse menu. It is open for breakfast and lunch Monday-Friday and makes available packaged meals for other times. A self-service espresso and tea station is open 24 hours a day in the Café and is free of charge.

LIBRARY SERVICES

The Stowers Library exists to facilitate and assist research and education and is an integral part of the graduate program. The library provides an organized and readily accessible collection of materials and information needed to meet the institutional, instructional and individual requirements of the predoctoral researchers and faculty.

To provide this service, the library subscribes to over 300 electronic journals, contains a vast print journal archive and houses over 400 field-specific books while maintaining active collection development to assure the continued growth of its holdings. Among its databases, it offers Science Direct Biological and Life Sciences, the Scopus citation database, and the Henry Stewart Talks online lecture series. The library offers dedicated inter-library loan borrowing with an average retrieval time of 24 hours. In a complex world of information, the library provides predoctoral researchers and faculty with personalized attention, training and instruction on library systems, databases (including the EndNote reference database), and Adobe Illustrator. In addition to around-the-clock, easy access to electronic holdings, the Stowers Institute Library maintains a well-appointed physical location offering a quiet study environment with Wi-Fi and computer access.

The library specialists at the Stowers Institute are professional members of the American Library Association, Missouri Library Association and Special Library Association, among others. The library received the 2009 “Outstanding Biomedical Library” award and the 2013 “Excellent Return on Investment in a Health Science Library” award, both from the Health Sciences Libraries Network of Kansas City.
Researchers at the Stowers Institute also have access to the library expertise and resources of consortial neighbors: Linda Hall Library of Science, Engineering and Technology; the AR Dykes Library of the University of Kansas Medical Center; and the Miller-Nichols Library of the University of Missouri-Kansas City.

**PREPARING FOR POSTDOCTORAL OPPORTUNITIES**

As a predoctoral researcher progresses through the program, the best source for career advancement and placement is his or her advisor. With the advisor’s established networks of colleagues, the advisor is well suited to both evaluate and assist each predoctoral researcher with the next step in his or her career. Furthermore, the members of each Supervisory Committee bring a wealth of experience placing young scientists in applicable career paths. In addition, the Dean and the Associate Dean for Academic Affairs assist predoctoral researchers in any way possible to help them reach their career goals.

GSSIMR participates in the “Crossroads” program at SIMR that fosters a sense of community among predoctoral and postdoctoral researchers. Crossroads activities are organized by a volunteer committee and include a variety of career-related and professional development workshops covering skills such as funding and grantsmanship, oral presentation skills, and effective manuscript writing. The annual Young Investigator Research Days (YIRD) is one of the major scientific and social events that Crossroads organizes. YIRD provides predoctoral and postdoctoral researchers with the opportunity to present their research to their peers with oral and poster presentations and to socialize on an Institute-wide level. Crossroads also organizes career development workshops that provide career resources for predoctoral and postdoctoral researchers to help them reach the next stage of their careers.
POLICIES

The following GSSIMR policies apply to predoctoral researchers enrolled in the Ph.D. and the Master’s programs. Current versions of these policies are found in the GSSIMR Policy Manual located at the end of this Handbook. Additional copies can be obtained by contacting the Graduate School office.

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In addition, the following academic and process policies pertain to GSSIMR predoctoral researchers.

Academic Conduct Policy: Policy Number 900
Predoctoral researchers must demonstrate personal integrity and honesty at all times in their coursework and research. Predoctoral researchers are obligated to refrain from acts they know or should have reason to know will impair their integrity or the integrity of GSSIMR. Because scientific research is the vital part of the curriculum of GSSIMR, predoctoral researchers are expected to adhere to the same high ethical standards in every facet of research as faculty and staff and to abide by policies of the SGC, SIMR, and GSSIMR.

Violations of the academic conduct policy include, but are not limited to cheating, plagiarism, fabrication, falsification, forgery, alteration, or other practices that deviate from those commonly accepted within the academic and scientific communities.

Dishonesty in any program requirement may result in a predoctoral researcher’s failure of that requirement and may be grounds for dismissal from the program.

The matter will be submitted to the Academic Progression Committee for deliberation and resolution.

Suspension
A predoctoral researcher may be suspended from any classroom or lab session for inappropriate or unsafe behavior or failure to adhere to any Graduate School academic policies. Suspension may last from several hours to one calendar year. During the suspension time, if it is an extended period, the predoctoral researcher’s schedule will be halted and frozen until they are released from the suspension and return to class and lab activities.

Faculty members are solely responsible for making the immediate decision to suspend a predoctoral researcher from classroom or lab sessions in progress for inappropriate or unsafe behaviors. At the time of a suspension by the faculty, conditions for reinstatement are explained by the Dean or Associate Dean for Academic Affairs. Failure to meet the conditions of reinstatement may result in course failure.
**Academic Appeal**

A predoctoral researcher may appeal any of the following:

1. Failing final course grade.
2. Suspension from lab exceeding two weeks.
3. Recommendation for dismissal.

An appeal is initiated by the predoctoral researcher submitting a typed statement to the Chair of the Academic Progression Committee, no later than seven (7) business days after being notified of the failing final course grade, suspension from lab or recommendation for dismissal. The typed statement must include the following:

1. A description of the issue.
2. Specific steps that have already been taken to resolve the issue with the faculty and/or Graduate School administration.
3. Evidence supporting why the predoctoral researcher believes the decision made was inconsistent with existing GSSIMR, SIMR or course policy, was arbitrary, or lacked sufficient evidence.

In preparing the appeal, it is the predoctoral researcher’s responsibility and burden to prove that the action taken by the faculty was inconsistent with existing policy, arbitrary, or lacked sufficient evidence. The predoctoral researcher may seek assistance from a Graduate School faculty member as an advisor in preparing the statement for an appeal. The role of the advisor is to assist the predoctoral researcher in understanding the policy and procedure. The advisor’s role does not include gathering information or presenting evidence.

The predoctoral researcher will submit the letter of appeal with supporting documents to the Chair of the Academic Progression Committee. The Chair will forward appeal documents to faculty involved in the subject matter of the appeal or its resolution. Faculty will submit to the Chair of the Academic Progression Committee within five (5) business days their response to the appeal document, including their supporting documentation. The Chair of the Academic Progression Committee will forward the faculty’s response to the predoctoral researcher.

The Academic Progression Committee will meet within seven (7) business days of receiving all the written appeal documents to hear the appeal. The predoctoral researcher may request one continuance, not to exceed one week, for good cause. The predoctoral researcher and faculty will be notified 72 hours before the hearing of the time, date and location of the hearing. It is preferable that predoctoral researchers and faculty attend the committee hearing in person. However, GSSIMR will accommodate the use of speakerphone or other electronic transmission method for a predoctoral researcher who is unable to participate in a face-to-face hearing. Members of the Academic Progression Committee, the involved predoctoral researcher and faculty, and the predoctoral researcher’s advisor will hear the appeal. The meeting is confidential and restricted to those persons listed. If an incident involves more than one predoctoral researcher, each predoctoral researcher will be heard individually.

An Academic Progression Committee member, who has been directly involved in the awarding of a failing course grade or recommending dismissal, will be replaced by a faculty member appointed by the Dean. If an Academic Progression Committee member is the involved predoctoral researcher’s thesis advisor, a replacement committee member will be assigned by the Dean for the purpose of the appeal.
The predoctoral researcher may be accompanied to the Academic Progression Committee hearing by his/her thesis advisor. When the Academic Progression committee has heard all the evidence, the committee members will meet, in private, to discuss the appeal. The Committee will make a decision within seven (7) business days after the hearing.

In an appeal of a failing course grade, the Academic Progression Committee can either: 1) uphold the assigned grade or 2) return the grade to the faculty for reconsideration. If the faculty is asked to reconsider a grade by the Committee, the faculty can uphold the assigned grade or change the grade. The faculty member will notify the Committee of their decision within 72 hours. The faculty’s decision is final. The Academic Progression Committee will notify the Dean and the predoctoral researcher of the outcome of the appeal.

If the outcome of an appeal results in dismissal from the program, the predoctoral researcher may make one last appeal to the Dean. The Dean of the Graduate School may take any action she/he deems is appropriate under the circumstances of the case. The decision of the Dean is final.

Readmission Following Dismissal
Dismissal from GSSIMR is a serious action and results when two (2) failing grades are earned in any course. Therefore, a predoctoral researcher who has been dismissed from GSSIMR should not expect to be readmitted. A predoctoral researcher who is dismissed from GSSIMR may choose to apply for readmission through the Admissions Committee. The Admissions Committee may consider an application for readmission if there is clear evidence of probable future academic success. It is the predoctoral researcher’s responsibility to support the application for readmission by submitting the following materials to the chairperson of the Admissions Committee:

1. A letter indicating the predoctoral researcher’s interest to be considered for readmission and including a written plan for achieving future academic success in the program.
2. Letters of recommendation for readmission from both the academic advisor and another faculty member from the most recent course taken.

The Admissions Committee reviews these materials and the predoctoral researcher’s overall academic record in making a decision and reserves the right to stipulate additional requirements for readmission.

Attendance Policy: Policy Number 901
The SGC expects good attendance and punctuality. If a Covered Individual is going to be late for work or absent, the Covered Individual must call in each day of the lateness/absence as early as possible, and no later than one hour before the start of work unless prior arrangements have been made. Notifying a co-worker is not sufficient; the Covered Individual must make every effort to speak with his/her supervisor and, if that is not possible, must leave a message for the supervisor on voicemail or e-mail.

Excessive absences or late arrivals may result in discipline, including termination. In general, absences will be considered excessive when the absentee rate is 3% or greater. For calculating the absentee or late arrival rate, absences will not count if they are authorized. Authorized absences include but are not limited to FMLA absences, vacation leave, jury duty leave, or approved unpaid leave. Sick days do count toward the absentee rate; the exceptions are FMLA sick days or sick days for which leave has been granted under the Americans with Disabilities Act or similar laws. Failure to call in or come to work three days in a row, absent extenuating circumstances, will be considered a voluntary resignation.
This policy will be interpreted in accordance with all applicable laws, including the Family and Medical Leave Act and the Americans with Disabilities Act.

**Predoctoral Researchers:**

To meet the goals of the program, predoctoral researchers are expected to comply with the above policy, fully participate in all phases of the research program, and maintain an acceptable time and attendance record. A predoctoral researcher who is unable to meet the time and attendance standard must notify The Graduate School office in advance of the tardiness or absence. With prior approval from the thesis advisor and The Graduate School office, a predoctoral researcher may take personal days, the number of which will be determined by the predoctoral researcher’s need. Excessive absences or late arrivals may be grounds for dismissal from the program. As defined by the Stowers Group of Companies Attendance Policy, “In general, absences will be considered excessive when the absentee rate is 3% or greater. For calculating the absentee or late arrival rate, absences will not count if they are authorized.”

Authorized absences for predoctoral researchers include, but are not limited to, FMLA absences, vacation leave, jury duty leave, or approved unpaid leave.

**Module Attendance for Predoctoral Researchers:**

Predoctoral researchers are required to attend all portions of all modules. The required times will be distributed in the schedules that accompany the syllabus. These will include:

4) Lectures, both in-class and Wednesday seminars and Friday Science Clubs
5) Journal clubs
6) Laboratory sessions, both the scheduled time as well as any extra time that may be necessary to complete the work. If finished early, predocs may be dismissed by the laboratory instructors.

Any absence needs to be cleared by the lead faculty of that module prior to the absence either through email or in person. Reasons must be stated and approval may be denied. Exceptions to this policy are made for emergencies where it may not be possible to contact faculty ahead of time. In those cases, predocs are encouraged to contact the faculty and/or the Graduate School as they are able. Unexcused absences for non-emergency reasons will be referred to the Associate Dean for Academic Affairs for subsequent action.

**Dress Policy: Policy Number 902**

Predoctoral researchers spend most of their time in a laboratory setting and they are to abide by the same recommendations for personal safety as others who work in laboratories at SIMR.

It is important that all predoctoral researchers give a clean, neat and appropriate appearance while participating in GSSIMR activities and courses. When predoctoral researchers are not in a lab setting they are not restricted from wearing clothing that does not cover the legs (shorts, skirts, dresses), open-toed shoes, perforated shoes, and canvas sneakers. While in the lab, the PPE Requirements must be followed. In addition, it is recommended that everyone confine long hair and loose clothing.

**PPE Requirements (Personal Protective Equipment)**

Predoctoral researchers spend most of their time in a laboratory setting and they are to abide by the same recommendations for personal safety as others who work in laboratories at SIMR. A baseline clothing requirement for entry to any laboratory space (or other space where hazardous materials may be used or stored) has been established and includes:

- Closed-toe, solid top shoes that cover the entire foot
- Clothing that covers the legs
When handling chemical, biological or radiological materials, one must wear the appropriate protective equipment which includes, at a minimum, a lab coat, safety glasses, and appropriate gloves, all of which are provided by the Stowers Institute. For a more complete description of the requirements, see the complete PPE Requirements from Environmental Health & Safety in the GSSIMR Policy Manual.

Any predoctoral researcher who does not abide by the recommendations will be reprimanded by his or her faculty or advisor with a verbal warning. If more than one verbal warning is required and the problem persists, the predoctoral researcher can be referred to the Associate Dean for Academic Affairs for further intervention and issue resolution. Any predoctoral researcher who does not follow the proper procedures when handling chemical, biological or radiological materials will be reprimanded by his or her faculty or advisor and may be prohibited from working with those materials in the future.

Grievance Policy: Policy Number 910
A predoctoral researcher with a grievance regarding a final grade or academic progress should refer to the Academic Conduct Policy in this handbook.

A predoctoral researcher with a grievance regarding on-going coursework, faculty, policies and procedures of GSSIMR or non-academic issues should attempt to resolve the grievance with the person responsible. If not resolved, the predoctoral researcher should consult with the Associate Dean for Academic Affairs who will advise the predoctoral researcher and serve as a liaison between the predoctoral researcher, the person responsible, and/or the administration of SIMR. Any consultation of this type between the predoctoral researcher and the Associate Dean for Academic Affairs will be confidential unless or until he or she allows the Associate Dean for Academic Affairs to approach any party for the purpose of mediation. If the grievance concerns the Associate Dean for Academic Affairs, the predoctoral researcher should consult with the Dean. A predoctoral researcher should present unresolved issues or appeals in writing to the Dean and to the Rotation Committee or Supervisory Committee, whichever is applicable. The Dean has 7 business days to present a resolution of the grievance. Predoctoral researchers who are dissatisfied with the resolution offered by the institution may contact the Missouri Department of Higher Education at (573) 751-2361 for information on filing a formal grievance.

A predoctoral researcher with a grievance regarding scientific conduct should first consult his or her advisor. If further resolution is necessary, the predoctoral researcher should follow the Scientific Misconduct policy, number 600. In addition, the predoctoral researcher should notify the Dean and the Associate Dean for Academic Affairs.

A predoctoral researcher with a grievance regarding equal opportunity, sexual harassment and other forms of harassment, reasonable accommodation, ethics, conflict of interest, fraud, or a similar matter should contact the Associate Dean for Academic Affairs who will serve as a liaison for the predoctoral researcher as he or she follows the process outlined in the applicable policy.

Transcript Issuance Policy: Policy Number 931
A current or former predoctoral researcher who wishes to obtain a copy of a transcript from GSSIMR must complete and sign a Transcript Request Form then submit the form in person, by mail, or as an e-mail attachment to the Graduate School office. Each request form must contain an original signature and/or be submitted as a signed PDF from the predoctoral researcher’s e-mail address. All financial
obligations to the Graduate School must be paid before a transcript will be issued. Three business days should be allowed for processing transcript requests, except at the close of a term when more time may be required.

Transcripts are issued at no charge. Photo identification is required to pick up a transcript from the Graduate School office. Transcripts are mailed by standard U.S. Postal Service first-class delivery. Fees for any special delivery (such as Fed Ex) are charged to a predoctoral researcher’s credit card or collected in cash before sending the transcript.

Copies of transcripts from other institutions are not provided.

**Withdrawal Policy: Policy Number 932**

A predoctoral researcher who wishes to withdraw from GSSIMR must meet with the Dean or his designee then submit a written notice to the Associate Dean for Administration & Registrar. The Associate Dean for Administration & Registrar subsequently takes the necessary steps to end the predoctoral researcher’s affiliation with GSSIMR in a timely manner.

If a predoctoral researcher withdraws from GSSIMR, his or her transcript indicates a grade of “W” for the courses in which he or she was enrolled at the time of withdrawal. “Withdrawal from Program” and the date of withdrawal is noted on the transcript following the last term’s grades. The effective date of the withdrawal is the date the predoctoral researcher’s written notice is received by the Associate Dean for Administration & Registrar.

A predoctoral researcher who withdraws from GSSIMR and later wishes to be reinstated must reapply by following the same admission application process as all applicants.

**FERPA: Policy Number 930**

The Family Educational Rights and Privacy Act of 1975 (as amended) (“FERPA”) is a federal law designed to protect the privacy of education records. It also provides guidelines for appropriately using and releasing education records. All Stowers Group of Companies officials must abide by FERPA.

**LEGAL STATUS**

The Graduate School of the Stowers Institute for Medical Research is a Missouri corporation organized exclusively for charitable, educational, and scientific purposes within the meaning of Sections 501(c)(3), 170(c)(2)(B), 2055(a)(2), and 2522(a)(2) of the Internal Revenue Code of 1986, as amended, or any corresponding section of any future federal tax code. The business of The Graduate School is managed by, and all of the powers are exercised by, the Board of Directors of The Graduate School. The conditions of Board membership are stated in the bylaws of The Graduate School.

**REVISING THE HANDBOOK**

The Handbook for Predoctoral Researchers (“Handbook”) will be reviewed and reapproved at periodic intervals of no greater than three years. The Handbook was originally approved on November 10, 2010 and was revised on August 17, 2012; August 15, 2013; August 7, 2014; January 26, 2015; August 10, 2015.
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# 2016-2017 ACADEMIC CALENDAR

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>August 8-23</td>
<td>Orientation and Pre-Courses(^1)</td>
</tr>
<tr>
<td>August 15</td>
<td>Thesis Laboratory Research Continues(^2)</td>
</tr>
<tr>
<td>August 29</td>
<td>Critical Analysis of the Scientific Literature Begins(^1) (15 weeks)</td>
</tr>
<tr>
<td>August 24</td>
<td>Module I Begins(^1) (2 weeks)</td>
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<tr>
<td>September 5</td>
<td>Labor Day Holiday</td>
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<tr>
<td>September 12</td>
<td>Module II Begins(^1) (2 weeks)</td>
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<tr>
<td>September 26</td>
<td>Module III Begins(^1) (2 weeks)</td>
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<tr>
<td>October 10</td>
<td>Module IV Begins(^1) (2 weeks)</td>
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<tr>
<td>October 24</td>
<td>Module V Begins(^1) (2 weeks)</td>
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<tr>
<td>November 7</td>
<td>Module VI Begins(^1) (2 weeks)</td>
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<tr>
<td>November 21-25</td>
<td>Thanksgiving Holiday(^1)</td>
</tr>
<tr>
<td>November 24-25</td>
<td>Thanksgiving Holiday(^2)</td>
</tr>
<tr>
<td>November 28</td>
<td>Module VII Begins(^1) (2 weeks)</td>
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<tr>
<td>December 12</td>
<td>Winter Break Begins(^1)</td>
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<tr>
<td>December 23-27</td>
<td>Christmas Holiday(^2)</td>
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<tr>
<td>January 2</td>
<td>New Year Holiday</td>
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<tr>
<td>January 3</td>
<td>Laboratory Rotation I Begins(^1) (8 weeks)</td>
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<tr>
<td>January 16</td>
<td>Martin Luther King Holiday</td>
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<tr>
<td>February 20</td>
<td>Presidents Day Holiday</td>
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<tr>
<td>February 27</td>
<td>Laboratory Rotation II Begins(^1) (8 weeks)</td>
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<tr>
<td>April 24</td>
<td>Laboratory Rotation III Begins(^1) (8 weeks)</td>
</tr>
<tr>
<td>May 29</td>
<td>Memorial Day Holiday</td>
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<tr>
<td>June 19</td>
<td>Thesis Laboratory Research Begins(^1)</td>
</tr>
<tr>
<td>July 4</td>
<td>Independence Day Holiday</td>
</tr>
</tbody>
</table>

\(^1\) First-Year Predoctoral Researchers  
\(^2\) Second and Subsequent-Year Predoctoral Researchers