

## Emergency Contacts

<b>Ambulance</b>	<b>405-744-6523 (On Campus)</b> <b>405-372-4171 (Off Campus)</b>
<b>Fire</b>	<b>405-744-6523 (On Campus)</b> <b>405-372-4171 (Off Campus)</b>
<b>OSU Police</b>	<b>405-744-6523 (On Campus)</b> <b>405-372-4171 (Off Campus)</b>
<b>Student in Distress</b>	<b>405-744-5458</b>
<b>University Health Services</b>	<b>405-744-7665</b>
<b>Stillwater Medical Center (Hospital)</b>	<b>405-372-1480</b>

## Safety

It is best to be prudent: DO NOT walk alone on campus after dark. If you do not have a friend to walk with, call the Campus Police at 405-744-6523 and ask for an escort.

**Remember: Call 911 immediately if a crime, accident, or other emergency occurs.**

**If using a cell phone to dial 911, confirm you are connected with the Stillwater Police Department.**

## Department of Biochemistry and Molecular Biology

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**Department of Biochemistry and Molecular Biology**

**Graduate Student Handbook**

**Version 2013**

*Cover Photograph By: Jason Wallace*

# Department of Biochemistry and Molecular Biology

## Graduate Student Handbook

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# Department of Biochemistry and Molecular Biology

## Introduction

Biochemistry, the central scientific discipline linking the chemical, physical and biological sciences, exerts a profound influence on the progress of medicine and agriculture. By applying concepts and methods of chemistry and physics to the fundamental problems of biology, biochemists have made great progress in their efforts to understand the chemistry of living organisms. Major discoveries concerning the biochemistry of genetic material provide the tools of molecular biology that are essential to contemporary life sciences research.

Biochemists and molecular biologists are concerned with living things and thus, must be fluent in the concepts of biological sciences. Since a biochemist's tools are the physical sciences, he or she must receive sound education in mathematics, physics and chemistry. Our academic programs are designed to integrate these disciplines, preparing students for a wide range of professional careers. Challenging positions for well-trained biochemists and molecular biologists are available in colleges and universities, state and federal laboratories, research institutes, medical centers and in an increasing number of industrial organizations, particularly the pharmaceutical and food industries. Biochemists are involved with research on the chemistry of processes occurring in plants, animals, and microorganisms, and with the discovery and development of antibiotics, vitamins, hormones, enzymes, insecticides and molecular techniques.

The Department of Biochemistry and Molecular Biology administers an undergraduate level major in Biochemistry and Molecular Biology through the College of Agricultural Sciences and Natural Resources, and a B.S. degree in Biochemistry through the College of Arts and Sciences. An honors program is available in either degree plan. The curriculum provides a broad background in chemistry and the biological sciences and permits flexibility to meet particular interests of the student. Courses in biochemistry are based on general, organic, and analytical chemistry. The curriculum also provides students with sufficient background in the basic sciences of mathematics, physics, chemistry, and biology needed for graduate study in most fields of contemporary science of agriculture or medicine and other allied health subjects, and is excellent for pre-professional students. The Department's research activities provide opportunities for undergraduate majors to improve their professional competence.

At the graduate level, the Department offers research-based programs of study leading to the Master of Science (M.S.) degree and the Doctor of Philosophy (Ph.D.) degree. Graduate work is more than a continuation and extension of undergraduate work. It is an inquiry into the current status of scientific knowledge and also into the basis for this knowledge and the methodology involved in its acquisition. Continued enrollment in a course of study leading to an advanced degree is contingent upon the student making satisfactory progress toward the degree. In general, this will entail the maintenance of at least a B average in formal course work and research credits. The latter is of particular importance in the Ph.D. program. Successful graduate work must be motivated by scientific curiosity. This will lead to exploration beyond regular assignments and ultimately result in some contribution to the solution of still unsolved problems of importance to mankind.

This Handbook is intended as a guide for most of the rules governing the graduate programs in the Department of Biochemistry and Molecular Biology. It also provides guidelines for handling discretionary aspects of the graduate programs. Graduate students and faculty should familiarize themselves with its content, paying particular attention to Departmental and University time points and deadlines.

## *Important Web Pages*

Biochemistry and Molecular Biology

OSU Graduate School

OSU Vice President for Research and Technology Transfer

Division of Agricultural Sciences & Natural Resources

College of Agricultural Sciences & Natural Resources

<http://biochemistry.okstate.edu>

<http://gradcollege.okstate.edu>

<http://vpr.okstate.edu/>

<http://dasnr.okstate.edu>

<http://casnr.okstate.edu>



## Biochemistry and Molecular Biology Graduate Student Association

### **BMBGSA Mission**

To provide an outstanding setting for the BMBGSA members to build a prolific career in the field of biochemical sciences.

To establish a mechanism for the graduate students to network with academic and industrial professionals that will broaden students' understanding in diverse areas of biochemical sciences.

To provide an opportunity for discussion of issues of concern for graduate students and offer leadership to direct action, when appropriate and necessary, to provide a collective voice for discussion of the graduate students' rights and responsibilities.

### **Graduate Student Research Symposium**

The Graduate Student Research Symposium is an annual event hosted by the Biochemistry and Molecular Biology Graduate Student Association. The Symposium has the specific goal of giving OSU graduate students in diverse areas of the biological sciences a chance to present their scholarly work.

- Presentations are evaluated by a panel of judges from the University.
- Awards are presented to the top four presenters in the oral and poster sessions.
- Participating in the Research Symposium allows students to learn about what other students are doing and get ideas for future projects.
- Prizewinners have an excellent item to add to their c.v.

Check with your BMBGSA Officers to find out how participants are chosen in your area.

### **General Meeting Information**

BMB Graduate Student Association general meetings are once a week. An email is sent out in advance to remind everyone. Membership dues are collected on a yearly basis.

### **Journal Club**

The BMBGSA Journal Club is designed to provide additional opportunity for research and to promote scientific discussion among graduate students. The Journal Club is a peer-oriented activity that is managed by graduate students, providing opportunities to present original research or a scientific paper. Attendance in Journal Club is mandatory for all Biochemistry and Molecular Biology graduate students.

### **Incoming Graduate Student Mentoring Program**

Incoming graduate students will be assigned to a volunteer graduate student mentor for the first year of the graduate program. The graduate student mentor will provide helpful insight into the life of a graduate student.

### **BMB Graduate Students Association Web Page**

On this website you will find the officers information for the BMB Graduate Students Association and a member list. Please notify the current web monitor for additions to the web page.

<http://www.orgs.okstate.edu/bmbgsa/>

## Graduate Programs

Many career opportunities in biochemistry require advanced course work, and so part of the Department of Biochemistry and Molecular Biology's curriculum is focused on its graduate program leading to the Non-Sequestor M.S. or Ph.D. degree. This graduate program is also an integral part of the extensive basic research activities supported by the Oklahoma Agricultural Experiment Station.

### Prerequisites

Although a B.S. in chemistry or biochemistry is preferred for our graduate program, students with strong backgrounds in other biological or physical science disciplines are eligible. Individuals not having 2 semesters of organic chemistry and 1 semester each of calculus and physical chemistry must take appropriate undergraduate courses to make up deficiencies. A semester of analytical chemistry is highly recommended. These should include the equivalent of one semester each of analytical and physical (biophysical) chemistry and two semesters each of general chemistry, organic chemistry and biochemistry. Also, a year of college physics and calculus is required. An average grade of at least 3.0 (4.0 = A) in all undergraduate courses is required. Deficiencies must be removed by taking appropriate undergraduate courses for which no graduate credit will be given.

### Entrance Examinations and Requirements

The results of the three general GRE exams (verbal, quantitative, analytical writing) are required for entrance to the Graduate College. Preferred minimum GRE Scores required for admission to the Biochemistry and Molecular Biology graduate program are: Verbal Reasoning 154 (64%); Quantitative Reasoning 153 (65%); and Analytical Writing 4.0 (48%). A satisfactory undergraduate grade point average and three letters of recommendation are normally required for admission. Non-resident applicants are required to meet the Graduate School requirement for TOEFL and TELP examinations. An advanced GRE subject matter exam (biochemistry, chemistry or biology) is also recommended. A TOEFL score with minimum of 79 Internet based test (IBT), or 550 paper based test (PBT). An IELTS score of 6.5 but if someone scores over that in each of the subareas they are exempt from the TELP exam.

### Language Requirements

There are no language requirements for the M.S. degree. The language requirement for the Ph.D. degree in Biochemistry and Molecular Biology is one year of foreign language at the college level or the equivalent. In most cases, language requirements at the undergraduate level have been met by two years of language at the high school level.

### Transfer of Graduate Credits

Transfer of graduate credits to the Graduate College is possible only when the student was formally admitted to the graduate college at another accredited institution and the course(s) was certified as graduate credit by that institution. The transfer work must be recommended by the advisory committee as part of an approved plan of study. The acceptance of transferred work requires the recommendation of the student's advisory committee and approval by the dean of the Graduate College at the time a plan of study is submitted. A maximum of nine (9) credit hours with a grade of "B" or better in each course can be accepted as transfer credits toward a master's degree. Doctoral students must complete at least 30 credit hours of their program at OSU. However, no more than nine (9) credit hours can be transferred from institutions that do not grant doctoral degrees.



# The Master of Science Degree

Twenty-four (24) credit hours of formal graduate courses are required, including BIOC 5002, 5753, 5824, 5853, and 5930. In addition, a student must present an acceptable research thesis (six hours of BIOC 5000) and pass a final oral examination covering their thesis work and related material. Research advisers are selected at the end of the student's first semester.

A non-thesis Master of Science degree is also available. It does not require a research thesis, but requires a report and extensive technical training in the laboratory. The non-thesis M.S. plan requires thirty (30) credit hours of coursework and two (2) hours of research. The non-thesis MS is not recommended for students wishing ultimately to pursue a Ph.D. However, we encourage our Ph.D. students to accept a non-thesis MS degree after they pass their qualifiers.

## COURSE REQUIREMENTS

The course requirements are determined with the assistance and approval of the student's advisory committee. A formal "Plan of Study" must be approved by the advisory committee and submitted to the OSU Graduate College before completing 17 credit hours of graduate study.

### M.S. (Non-Thesis)

For the Non-Thesis M.S. degree, the Graduate School Plan II (Report Option) is followed. This option requires 32 credit hours consisting of 30 credit hours of course work and 2 credit hours of research. To meet requirements in Biochemistry and Molecular Biology, non-Thesis students are required to complete BIOC 5002, 5753, 5824, 5853, 5930 (6 credit hours) and 5000 (2 credit hours). A grade of B or better must be obtained in each of these M.S. level courses. In addition, Non-Thesis M.S. students are required to pass with a B or better two advanced (BIOC 6000-level) Biochemistry and Molecular Biology courses. Students receiving a C or lower in an advanced level course will have the opportunity to take additional advanced BIOC courses to meet the requirement of passing two advanced courses with a B or better. Non-Thesis M.S. students must enroll in 2 credit hours of BIOC 5000 in their last semester. Students are expected to enroll once in BIOC 6110

### M.S. (Thesis)

For the Thesis-M.S. degree, the Graduate School Plan I (with thesis) is followed. The thesis M.S. degree requires a total of 30 credit hours with 24 credit hours of course work and 6 credit hours of research. BIOC 5002, 5753, 5824, 5853, and 5930 (2 credit hours) must be included in that total and a B or better is required in each of these 5000-level courses. Thesis M.S. students also are required to complete 6 credit hours of research (BIOC 5000) with a B or better. Thesis M.S. students are required to pass with a B or better, two advanced (BIOC 6000-level) Biochemistry and Molecular Biology courses. Students receiving a C or lower in an advanced level courses will have the opportunity to take additional advanced BIOC courses to meet the requirement of passing two advanced courses with a B or better. Students are expected to enroll once in BIOC 6110.

## REQUIRED EXAMINATIONS

### M.S. (Non-Thesis)

Students electing this program will take BIOC 5824 followed by a series of three laboratory rotations (2 credit hours each semester, BIOC 5930) to acquire laboratory skills in basic techniques of biochemistry and molecular biology. In the final semester, they will write a report presenting the theoretical and experimental aspects of the techniques developed in those rotations and present an oral report to the faculty in Biochemistry and Molecular Biology in an open seminar (BIOC 6110). Students are expected to register for Research (BIOC 5000 for 2 credit hours) for this research writing project. The written and oral reports must be approved by the student's Graduate Committee and an oral exam must be passed.

### M.S. (Thesis)

Students entering the M.S. Thesis Program must identify a faculty advisor and complete Research for a thesis. They must present a final oral defense of their completed Master's research thesis before the advisory committee. The seminar (BIOC 6110) portion of the oral defense will be open to the public and must be announced at least two weeks in advance of the scheduled seminar. Supervisory or examining committee report forms must be filed at the conclusion of the defense with the Biochemistry and Molecular Biology Department.

## The Doctor of Philosophy Degree

The PhD program course requirements are determined with the assistance and approval of the student's advisory committee and are based on whether a BS or MS has previously been earned: (a) a minimum total of sixty (60) graduate credits are required if a student enters the PhD program having earned a MS in a related discipline; (b) a minimum total of ninety (90) graduate credits are required if a student enters the PhD program having earned not higher than a BS in a related discipline.

### COURSE REQUIREMENTS

The course requirements are determined with the assistance and approval of the student's advisory committee. A formal "Plan of Study," with a minimum of 30 credit hours of graduate coursework, a minimum of 15 credit hours of research, and a minimum total of (a) 60 or (b) 90 credit hours must be approved by the student's advisory committee and submitted to the OSU Graduate College before completing (a) 17 or (b) 28 credit hours of graduate study. The student's advisory committee is selected at the end of the second semester. All graduate students must maintain a B average in their graduate coursework. A grade of C in a single graduate course can place the student on academic probation. The Department offers research experience in a variety of areas. Formal PhD program graduate coursework includes all of the courses listed for the MS degree, at least four of the advanced graduate courses in biochemistry (6000 level) including BIOC 6740, and additional courses and lab experience appropriate to the student's interests. Each student takes a series of preliminary oral examinations in January after his or her third semester. Each student also presents and defends their research thesis proposal sometime in their 4<sup>th</sup>-5<sup>th</sup> semester, and at the end of their program presents their research and defends their dissertation in a final oral examination. The doctoral dissertation must contain a substantial original contribution to the field of biochemistry and molecular biology.

*Course selection guidelines:*

- **Required graduate courses:** BIOC 5002, 5753, 5853, 5930, 6740. A grade of B or better is required in each of these 5000-6000 level courses. The advisory committee can approve previous coursework or experience as meeting these requirements.
- **Four advanced graduate courses** (6000-level) in Biochemistry and Molecular Biology. For the combined advanced courses, a B average must be maintained.
- **Enroll twice in BIOC 6110.**
- Graduate courses in other fields of specialization can be taken as appropriate to the student's dissertation research and interests.

### REQUIRED EXAMINATIONS

Failure to meet examination deadlines will result in reduction or elimination of financial support provided to the student or dismissal from the graduate program, as deemed appropriate by the Department Head in consultation with the Graduate Program Committee and the dissertation advisor.

#### Ph.D. Preliminary Examination

**Reading List:** In preparation for the Preliminary Examination, students will be given a reading list of review articles and primary publications covering 10 topics that represent areas in which a "well trained" biochemist and molecular biologist should have working knowledge. The reading list and subject areas will be provided to the students upon entering in their second semester of the graduate program. The reading list is extensive, but not all inclusive, and should serve as an introductory guide to the subject areas. Students are expected to be well-versed in each subject area and capable of demonstrating general knowledge of terms, concepts, and methodology as well as the ability to assimilate material from the primary literature. The Reading List is located on the departmental website and can be accessed by logging in with your OKEY username and password.

An oral examination will be administered to the student by an examination committee of three faculty members between the fall and spring semester of their second year after entering the graduate program. The oral examination will be approximately 2.0 hours in length, and a decision of pass or fail will be determined by consensus of the examination committee. Students who fail the examination can petition the Graduate Program Committee to take a second exam of a similar format. If the petition is approved, re-testing must be completed no later than Spring Break of the following spring semester. The student will receive a report from the chair of the committee detailing the basis of the committee's decision, with a copy to remain in the student's file. The student's thesis advisor is excluded from the preliminary examination committee.

#### Ph.D. Candidacy Examination

Doctoral students will submit a document of intent for a written proposal in the area of their dissertation to their advisory committee by **May 15<sup>th</sup>** in their second year after entering the graduate program. The advisory committee will approve, or modify if necessary, the topic by **May 30<sup>th</sup>**. The student will then prepare a written proposal that closely

follows guidelines from a federal granting agency (NIH, NSF, or USDA guidelines will be acceptable), subject to format approval by the student's committee. The intent of the written proposal is to identify an important unanswered question within the dissertation topic area, and write a proposal that addresses this question using relevant experimental approaches. The length of the proposal should be approximately 20 pages, with text double-spaced and written in 12 pt Times font with one inch margins. Figures and references are excluded from the page limit guidelines. The written proposal will be submitted to the graduate student's advisory committee **August 1<sup>st</sup>**. The committee will evaluate the quality of the written proposal and determine if the student can progress to the oral presentation portion of the candidacy examination.

### **Oral Presentation**

In the fall semester of their third year and one week before their scheduled oral exam, students should enroll in BIOC 6110 (seminar) and present the proposal to members of the advisory committee in an open departmental seminar. An oral examination will be held immediately following the oral presentation and a decision of pass or fail will be determined by consensus of the examination committee. In addition to the material in the oral and written presentations, all other areas of Biochemistry and Molecular Biology are open for discussion and inquiry by the committee members. Students who fail the examination can petition Graduate Program Committee to take a second exam of a similar format. If the petition is approved, re-testing must be completed within one month. Students failing the second examination will be asked to complete the requirements for the M.S. Program.

### **Final Oral Defense of Dissertation**

Upon completion of research activities the candidate will prepare a written dissertation that will be evaluated by the student's advisory committee. Students are recommended to consult and involve their advisory committee at early steps during preparation of the dissertation. Candidates will enroll in BIOC 6110 (seminar) will give a final public presentation of their dissertation research followed by an oral defense of the dissertation to their advisory committee. The advisory committee is the final arbitrator in the success of the dissertation and its defense.

## **Bioinformatics Graduate Certificate Program**

The Department of Biochemistry and Molecular Biology also offers the Bioinformatics Graduate Certificate Program – a multi-disciplinary program that involves faculty in Departments across the University. This Program's mission is to train post-baccalaureate students in the techniques required to generate, analyze, and interpret complex biologically-derived data sets. The Graduate Certificate in Bioinformatics requires completion of 16 credit hours of course work eligible for graduate credit. A minimum of 12 credit hours must be at the 5000 level or above. Required courses include 9 credit hours from the core areas of life sciences, statistics, and computer sciences. Additional information on this Certificate Program is available online: <http://www.bioinformatics.okstate.edu/>.

## **Review Process for Admission**

The Department's Graduate Studies Committee reviews all eligible applications for the graduate program in Biochemistry and Molecular Biology. To be eligible for committee review, each applicant must submit an application for admission to the Graduate College, along with transcripts of all academic records, GRE scores, and TOEFL scores if undergraduate education was in a language other than English. Applicants must submit to the Department three reference letters, a current resume, and a statement of purpose.

## **All Graduate Programs (M.S. & Ph.D.)**

### **Advisement**

During the first semester of graduate work until a permanent advisor is selected, the Department Head or the Graduate Student Coordinator will serve as temporary advisor. In the first semester of graduate work, the student should choose a research advisor in consultation with the Department Head and with consent of the Graduate Student Coordinator.

By the end of the second semester in residence, students and their advisors will request the assignment of an advisory committee by the Graduate Dean. For non-Thesis M.S. students, the committee normally consists of a fixed committee of three faculty in Biochemistry and Molecular Biology, assigned by the Department Head. For thesis M.S. students the committee will consist of a minimum of three members of the Graduate Faculty, of which three must also be faculty in the Department of Biochemistry and Molecular Biology. For Ph.D. students the committee will consist of a minimum of four members of the Graduate Faculty with at least three members from the Department of Biochemistry and Molecular Biology and at least one member from an appropriate outside department. The student will consult with his/her research advisor and the Department Head concerning the membership of this committee.

All graduate students are expected to develop a Plan of Study immediately after forming an Advisory Committee. The Graduate College requires a plan of study before completing the 17<sup>th</sup> hour for M.S. students and the 28<sup>th</sup> hour for Ph.D. students. The Plan of Study must be approved by their Advisory Committee, the Department Head, and the Dean of the Graduate College.

### **Student Appraisal**

The performance of any students receiving a C in any course in their first year will be evaluated by the Graduate Program Coordinator before the fall semester of the next year. The committee will consider academic performance, preliminary examination record and the evaluation of the student's research performance by the research advisor. After due consideration of these factors, the committee will recommend to the entire faculty whether each student is qualified to continue working toward a degree. The standards for this recommendation will be set by the committee. The research advisor may submit a separate recommendation to the faculty if she/he disagrees with the recommendation of the committee. The faculty will then decide whether to accept or reject each recommendation. Those judged unqualified will be asked to complete requirements for a M.S. Degree or leave the program.

### **Annual Graduate Student Progress Report**

All graduate students in the Department of Biochemistry and Molecular Biology are required to complete the Annual Graduate Student Progress Report and submit the report to the Departmental office by the first week of June of each year. The report will indicate if satisfactory progress is being made toward your degree. Satisfactory progress includes having an annual committee meeting at least one time a year and regular attendance at the Departmental seminar, BMBGSA Journal Club, and other Departmental events. Students who are making unsatisfactory progress toward their degree will initially meet with the Department Head to develop a plan to obtain satisfactory progress. Students with continued unsatisfactory progress will be referred to the Graduate Program Committee for a student appraisal that can result in removal from the graduate program.

### **Responsible Conduct of Research Training**

All graduate students are required to complete "Responsible Conduct of Research Training" in compliance with the university policy. For more details please go to: <http://www.gradcollege.okstate.edu/faculty/RCR.php>

### **Graduate Student Support and Tuition Waivers**

M.S. degree applicants normally are not eligible for stipend support from the Department, although tuition waiver may be possible for some U.S. Residents and assistance may be possible by affiliation with research programs. Stipend and tuition support for Ph.D. candidates are awarded from Department resources on a competitive basis at the time of admission to the program. Normally, initial support from general Departmental funds will be for one semester with responsibility for support passing to the research program in which the student does doctoral research. Stipend support will normally be continued for a total of four years with the possibility for renewal for one additional year in exceptional cases. Under all circumstances, continued graduate student support will be contingent on satisfactory academic and research performance, normal progression through the curriculum, timely completion of the Written and Oral Qualifying Exams and available funding. Students switching from the Ph.D. Program to the M.S. Program will not continue to receive Departmental support. To be eligible for tuition waivers and stipend support students are required to complete financial aid forms in the Graduate School yearly and to periodically update their visa status. It is the student's responsibility to follow through with these requirements. Failure to do so may result in partial or total loss of financial assistance. One or more students will be asked by the Department head each fall and spring semester to serve as Graduate Teaching Assistants (GTA) to assist in the laboratory teaching program. They will receive a GTA stipend.

### **Petitioning to Have Requirements Waived**

The requirements described in this handbook provide a comprehensive background for all students in areas important to the pursuit of a career in Biochemistry and Molecular Biology. While the described guidelines are to be fulfilled by all graduate students, the Department recognizes that specific cases may arise in which: Equivalent requirements (especially course requirements) have been fulfilled recently at a comparable University.

A student's program would benefit if specific aspects of the Biochemistry and Molecular Biology requirements were modified. If a student feels this to be the case, a formal written petition may be made to the Research Advisory Committee to request waiving or alteration of the Biochemistry and Molecular Biology requirements. Students may petition only once for each issue and, in all cases, sufficient documentation must accompany the request. Petitions should be made in a timely fashion prior to graduation (generally within the first year for M.S. students and the first two years for Ph.D. students). An amply documented petition to waive Departmental course requirements would include, but would not be limited to: grade received, institution and date the course was taken, a letter from the course instructor if possible, a copy of the course syllabus, a description of general areas covered, a listing of textbooks used in the course, and a letter of support from the student's Research Advisor. Other areas open to petitioning include substitutions in general course

area requirements. In all cases, the student should clearly describe why the current requirement would not best fulfill their needs and what would be gained as a result of any changes.

### **Graduate Student Travel**

The Department of Biochemistry and Molecular Biology Graduate Program encourages student attendance at scientific meetings/workshops. Generally, a student's Research Advisor is expected to provide support for students who are presenting papers/posters at a meeting. Alternatively, students should seek travel grants from an appropriate professional organization, or the graduate college.

### **Graduate Student Vacation Policy**

Each graduate student shall accrue 7 vacation days per year based on an annual 0.50 FTE assistantship. First year students accrue vacation **after being in the program one calendar year**. Students will only be allowed to accrue a total of 21 days' vacation time. Students must give at least three weeks' notice and come to a mutual agreement with their advisor prior to taking vacation. International students must discuss vacation plans prior to finalizing travel arrangements. Exceptions will be made for emergency travel. The 7 days do not include University Holidays. Students will not be compensated for any unused vacation days upon graduation or termination of employment.

### **Code of Conduct for Graduate Students**

Graduate students must abide by all relevant standards and rules of the University. The Code of Conduct and related processes serve to educate students about their civic and social responsibilities as members of the University community. Therefore, the primary focus of the disciplinary process is on educational and corrective outcomes; however sanctions such as suspension or expulsion from the University may be necessary to reinforce community standards and to protect the campus community. The most current version of the Code of Conduct is available electronically at <http://www.okstate.edu/ucs/SJA/srr.htm>. You should recognize that all research carried out under a sponsoring faculty member legally belongs to the University. Failure to abide by University or Departmental guidelines can result in dismissal from the program. If you are concerned about an ethical situation, you should consult your Research Advisor, the Graduate Student Coordinator, or the Department Head.

### **Leaving the Program**

A student may request a temporary leave of absence from the Graduate Program by petitioning the Biochemistry and Molecular Biology Department Head. This should be done in writing and should contain appropriate explanations. To re-enter the program, the student must petition the Biochemistry and Molecular Biology Department. Acceptance will depend upon issues such as past performance, funding availability and whether there is an advisor willing to accept the student in his/her laboratory. Students should recognize that without formally requesting and receiving such a Leave of Absence, they are officially terminated by the University any time they do not register for one semester, after which they must officially apply for re-admittance to the University. To prevent the need to reapply for admittance, students should enroll in at least one class.

Students may resign from the Graduate Program at any time. To do so, they should write a letter to the Graduate Program Coordinator stating their intent. It is advised that students contemplating such a move should first consult with their Research Advisor, the Graduate Program Coordinator, and the Department Head, before beginning such a process. Students can be dismissed from a faculty member's research program at any time if the Research Advisor (in consultation with the student's Advisory Committee) determines that the student is not making acceptable progress. Such a dismissal in itself will not constitute dismissal from the Department, but it is the obligation of the student to find an acceptable replacement Research Advisor in the Department within one semester. Students will not be allowed to continue their education within the Department without a Research Advisor. If you find yourself in this situation, you should schedule a meeting with the Graduate Program Coordinator to determine the best course of action.

Students can be terminated from the Graduate Program by their Advisory Committee for the following reasons:

- 1) Failure to meet minimum academic standards
- 2) Failure to make acceptable progress in their program work
- 3) Failure to meet generally acceptable ethical standards of the University
- 4) Failure on the preliminary or candidacy exams
- 5) Failure during the thesis/dissertation defense

It is the obligation of the student to ensure that they are complying with University and Departmental guidelines with respect to these aspects of their education. If students are unsure or concerned about their status within the Department, they should consult with their Research Advisor, the Graduate Program Coordinator, or the Department Head.

# Summary of OSU Graduate Degree Requirements

## Enrollment Requirements

A more detailed description of the Graduate Program in Biochemistry and Molecular Biology is available on the Department's website: <http://biochemistry@okstate.edu/graduate-program>. The requirements listed below complement the general graduate requirements described in the "Graduate College" section of the Catalog. All Biochemistry and Molecular Biology graduate students are expected to attend and participate in the Department's Graduate Student Association Journal Club and the Department's Seminar Series throughout the academic year.

- Graduate students must complete a minimum of 6 hours during each 12 month period to be continuously enrolled. Failure to maintain continuous enrollment requires reapplication and admission to the program.
- Graduate students must be enrolled in at least two hours during any semester in which they are utilizing university resources including the semester in which they graduate.
- Graduate Research Assistants (GRA's) must meet minimum enrollment requirements:

0.50 Or greater FTE	6 hours in fall or spring; 2 hours in summer
Less than 0.50 FTE	9 hours in fall or spring; 2 hours in summer
- All students (including those enrolling in research hours only) must be enrolled by the deadlines listed in the Schedule of Classes. Students cannot add courses after first 2 weeks of semester. (This includes research credits).

## Time Limits

- All requirements must be completed within the following periods calculated from initial enrollment in the program:
  - Master's Degree: Degree completion within 5-6 years of first enrollment.**
  - Doctoral students: Degree completion within 7-9 years of first enrollment**
- All courses must have been taken and completed within 10 years of degree completion. No course on the plan of study may be more than 10 years old at the time of graduation.
- All requirements for the doctorate must be completed within 4 years from the passing of the Qualifying Exam.
- Students must follow deadlines for submission of thesis/dissertations and for completing final exams as listed in the catalog.

## Grade Point Requirements

- Students whose cumulative graduate GPA fall below 3.0 are subject to being placed on Strict Academic Probation (SAP).
- Students on SAP may be suspended if they receive any grade below a B.
- To graduate a student must have a minimum of a 3.0 GPA in all course work. GPAs are calculated independently.

## Transfer Hours

- Master's and EdS students may transfer a maximum of 9 hours from another university or from special student status at OSU.
- Doctoral students must take at least 30 hours at OSU. No more than 9 credit hours can be transferred if doctoral candidate received masters from an institution that does not grant doctoral degrees.

## Responsible Conduct of Research Training

- All graduate students are required to complete "Responsible Conduct of Research Training" in compliance with the university policy. For more details please go to: <http://www.gradcollege.okstate.edu/faculty/RCR.php>

## Plan of Study

- **The plan of study for a Master's candidate must be filed no later than the semester when the 17<sup>th</sup> hour is completed. Doctoral candidates should file the plan of study by the 28<sup>th</sup> credit hour or as early in their program as is feasible.**
- All students must indicate on their plans of study whether or not their research will involve human subjects. **If human subjects are to be used, approval must be received from the IRB *prior* to the beginning of the research.**

## INSTRUCTIONS FOR COMPLETING THE MASTERS PLAN OF STUDY (POS) FORM

**\*If you are submitting a Plan of Study for the first time, use the new online Plan of Study Application.**

1. Review the POS Checklist [see <http://gradcollege.okstate.edu/download/plansforms.htm>] for advisement on the required elements of a Plan of Study. For Master's students, POS are due before completion of the 17<sup>th</sup> credit hour.
  2. Please type all information. Additional forms may be downloaded from the Graduate College website at <http://gradcollege.okstate.edu/download/plansforms.htm>. Please staple multiple pages with the first page of the Plan of Study (student information is on the top) as the first page.
  3. Check the appropriate box to signify if this is the original (first time submission) POS you are submitting for this degree or if this is a revised POS (you had a POS approved earlier and are making changes to your Plan).
  4. Complete all student information as requested. Indicate whether you are seeking a Master of Arts, Master of Science or another type of Master's degree.
  5. Please be sure that you *accurately* identify the name of your major area of study and the department in which you are studying. Accurately identify any option and/or specialization you are seeking.
  6. Type the names of all committee members, with the name of your Committee Chair on the first line.
  7. Check whether you intend to complete a thesis, creative component, or report as the culminating project for your master's degree (you may change your mind prior to completing your studies).
  8. Please go to [http://gradcollege.okstate.edu/download/pdf/Research Compliance for Graduate students.pdf](http://gradcollege.okstate.edu/download/pdf/Research%20Compliance%20for%20Graduate%20students.pdf) to determine if your research requires approval from the Office for University Research Compliance. By checking the box on the POS you confirm that you will follow all compliance procedures that are appropriate for your study.
  9. List courses in chronological order. List the course prefix (3 to 4 letters) and course number (4 digits) in the first column and the course title in the second column. [Note: all 3000 and 4000-level courses included on the POS must be offered for graduate credit—an asterisk (\*) must appear next to the course number in the OSU catalog appropriate to the time the course is taken.] If a course is taken at an institution other than OSU, in the third column name the institution where the course was/will be taken (see OSU Catalog for requirements for transfer courses). Give the semester and year the course was/will be taken in the fourth column. Finally, indicate the number of credit hours to be received for each course in the fifth column. At the end of this table, indicate the total number of credits to be used for this degree.
  10. Print the form. Indicate the semester and year you anticipate graduating. Carefully read the university requirements for coursework to be listed on a POS and *sign and date the form*.
  11. Obtain approval signatures from *ALL* committee members as well as the department head or graduate coordinator (check with your major department for the signature requirements).
  12. Submit **ONE** copy of the completed and signed form to the Graduate College. Students should retain a copy for their own use and information. Once the Graduate College has approved the POS, a copy will be sent to the Graduate Coordinator of the major department—check with that individual to get a copy of the approved POS.
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## INSTRUCTIONS FOR MAKING REVISIONS TO THE ORIGINAL PLAN OF STUDY

1. To revise the plan of study, obtain a copy of the approved original POS from the graduate coordinator or graduate records office in your department.
2. Check the "Final Revised Plan" box at the top of the POS.
3. For a small number of changes, simply handwrite any changes **directly on** the original POS. For example, cross off any unused courses and hand-write any new courses you intend to use for your degree (indicating course substitutions). Do the same with any changes in your committee and other updates to your POS. For a large number of changes (i.e., more than ½ of the POS) create a fresh Plan and mark the "Final Revised Plan" box at the top.
4. Initial and date next to your original signature, indicating that you agree with the changes.
5. Have your Committee Chair initial any changes made to this POS in the margin where the change is noted.
6. Have the department head (or graduate coordinator, if appropriate to your department) initial and date his/her original signature line, indicating concurrence with the changes.
7. Submit the revised POS to the Graduate College for approval. The plan should be revised and resubmitted only once, at the beginning of the intended semester of graduation.

## INSTRUCTIONS FOR COMPLETING THE DOCTORAL PLAN OF STUDY (POS) FORM

**\*If you are submitting a Plan of Study for the first time, use the new online Plan of Study Application.**

1. Review the POS Checklist [see <http://gradcollege.okstate.edu/download/plansforms.htm>] for advisement on the required elements of a Plan of Study. For doctoral students, POS are due before completion of the 28<sup>th</sup> credit hour.
2. Please type all information. Additional forms may be downloaded from the Graduate College website at <http://gradcollege.okstate.edu/download/plansforms.htm>. Please staple multiple pages with the first page of the Plan of Study (student information is on the top) as the first page.
3. Check the appropriate box to signify if this is the original (first time submission) POS you are submitting for this degree or if this is a revised POS (you had a POS approved earlier and are making changes to your Plan).
4. Complete all student information as requested. Indicate whether you are seeking a Doctor of Philosophy or a Doctor of Education degree.
5. Please be sure that you *accurately* identify the name of your major area of study and the department in which you are studying. Accurately identify any option and/or specialization you are seeking.
6. Type the names of all committee members, with the name of your Committee Chair on the first line; the name of your Outside Member is on the second line.
7. Please go to [http://gradcollege.okstate.edu/download/pdf/Research\\_Compliance\\_for\\_Graduate\\_students.pdf](http://gradcollege.okstate.edu/download/pdf/Research_Compliance_for_Graduate_students.pdf) to determine if your research requires approval from the Office for University Research Compliance. By checking the box you confirm that you will follow all compliance procedures that are appropriate for your study.
8. List courses in chronological order. List the course prefix (3 to 4 letters) and course number (4 digits) in the first column and the course title in the second column. [Note: all 3000 and 4000-level courses included on the POS must be offered for graduate credit—an asterisk (\*) must appear next to the course number in the OSU catalog appropriate to the time the course is taken.] If a course is taken at an institution other than OSU, in the third column name the institution where the course was/will be taken (see OSU Catalog for requirements for transfer courses). Give the semester and year the course was/will be taken in the fourth column. Finally, indicate the number of credit hours to be received for each course in the fifth column. At the end of this table, indicate the total number of credits to be used for this degree.
9. Print the form. Indicate the semester and year you anticipate graduating. Carefully read the university requirements for coursework to be listed on a POS and *sign and date the form*.
10. Obtain approval signatures from *ALL* committee members as well as the department head or graduate coordinator (check with your major department for the signature requirements).
11. Submit **ONE** copy of the completed and signed form to the Graduate College. Students should retain a copy for their own use and information. Once the Graduate College has approved the POS, a copy will be sent to the Graduate Coordinator of the major department—check with that individual to get a copy of the approved POS.

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### INSTRUCTIONS FOR MAKING REVISIONS TO THE ORIGINAL PLAN OF STUDY

1. If you have changed your Plan of Study to make revisions, obtain a copy of the approved original POS from the graduate coordinator or graduate records office in your department.
2. Check the “Final Revised Plan” box at the top of the POS.
3. For a small number of changes, simply **handwrite** any changes **directly on** the original POS. For example, cross off any unused courses and hand-write any new courses you intend to use for your degree (indicating course substitutions). Do the same with any changes in your committee and other updates to your POS. For a large number of changes (i.e., more than ½ of the POS) create a fresh Plan and mark the “Final Revised Plan” box at the top.
4. Initial and date next to your original signature, indicating that you agree with the changes.
5. Have your Committee Chair initial any changes made to this POS in the margin where the change is noted.
6. Have the department head (or graduate coordinator, if appropriate to your department) initial and date his/her original signature line, indicating concurrence with the changes.
7. Submit the revised POS to the Graduate College for approval. The plan should be revised and resubmitted only once, at the beginning of the intended semester of graduation.



## **Graduation**

- Students must file a “diploma card” at the beginning of the semester in which they are expecting to graduate. If they fail to graduate during that semester, they must re-file the card.
- At the beginning of the semester of anticipated graduation, students should update their plans of study to ensure consistency with actual course work.
- Published deadlines for theses and dissertations are strictly enforced.
- A hard bound and an electronic (pdf) copy of the thesis must be given to both Department and the advisor.
- Students must submit their thesis or dissertation to the Graduate College by one of two (2) options described in the OSU Catalog.
- Within first two weeks of semester, student must file graduation clearance form and diploma application.
- Student must meet all Graduate College deadlines
  - Draft of thesis/dissertation
  - Final copy of thesis/dissertation
- All graduate policies related to graduate college degree programs can be found in the OSU Catalog.

## **Summary of Graduation Requirements**

- Completion of an approved program of study with a minimum 3.0 GPA
- Successful oral defense and completion of thesis
- Completion of any writing and seminar requirements

In general, the information in this handbook and the accompanying forms are the student’s responsibility during his/her term in the program. Please refer to the *OSU Graduate Catalog* for official information.

[http://gradcollege.okstate.edu/current\\_student/](http://gradcollege.okstate.edu/current_student/)

## Typical Study Plans for Graduate Students in Biochemistry (Example Only)

	Ph.D. Accelerated	Ph.D. Normal	MS Thesis	MS Non-Thesis
<b>Year 1 all entering Students (Fall)</b>				
5002 - Biochemistry Graduate Colloquium	2	2	2	2
5753 - Biochemical Principles	3	3	3	3
5824 - Biochemical Laboratory (if not waived)	4	4	4	4
5930 - Rotations	3	3	2	-
<b>Year 1 (Spring)</b>				
5853 - Metabolism	3	3	3	3
6763 - Nucleic Acids and Protein Synthesis	3	3	3	3
Electives	2-3	2-3	2-3	2
6000 - Research	3	3	-	-
5930 - Rotations	-	-	-	2
<b>Year 1 (Summer)</b>				
6820 - Special Topics	1	1	1	1
5000 - Research	-	-	2	-
6000 - Research	4	4	-	-
5930 - Rotations	-	-	-	2
<b>Year 2 (Fall)</b>				
6740 - Physical Biochemistry	1	1	1+	1+
6783 - Biomembranes and Bioenergetics	3	3	3+	3+
Electives	3+	3+	3+	3+
5000 - Research	-	-	2	-
6000 - Research	3-6	2-5	-	-
5930 - Rotations	-	-	-	2
<b>Year 2 (Spring)</b>				
6773 - Protein Structure and Enzyme Functions	3	3	3+	3+
Electives	-	-	-	2+
6110 - Seminar (Thesis Defense)	-	-	1	1
5000 - Research	-	-	5	3
6000 - Research	7	6	-	-
<b>Year 2 (Summer)</b>				
6820 - Special Topics	1	1	-	-
6000 - Research	5	3	-	-
<b>Years 3-5 (Fall)</b>				
Electives	5+	5+	-	-
6000 - Research	18	18	-	-
6110 - Seminar Year 3 (Candidacy Exam Presentation)	1	1	-	-
<b>Years 3-5 (Spring)</b>				
6000 - Research	18	18	-	-
<b>Year 3-5 (Summer)</b>				
6000 - Research	9	9	-	-
<b>Final Semester</b>				
6110 - Seminar (Dissertation Defense Presentation)	-	1	-	-
Course Hours Required	30	30	24	30

Research Hours Required	60	60	6	2
Total Credits Required	90	90	30	32

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+Optional – Opportunities for students to adapt their program to their specialized needs.  
Students should plan their program with advice of their Advisor and Advisory Committee.

The Accelerated Ph.D. program requires additional credits in the summer of the first year and following semesters. Option for this program must be made in time to obtain Department and Graduate School Approval of this option. Students already holding a M.S. Degree will take class-work required to complement their background and meet the needs of their doctoral research. Those students should immediately identify an advisor, establish a plan of study, and determine the best manner in which to complete the curriculum and research requirements for their program.

Note: An override is required to enroll in more than 12 hours per semester.

## Ph.D. Timetable (EXAMPLE)

### First Year

#### Fall Semester

- Orientation Session
- Take appropriate candidacy preparation courses
- Meet with Provisional Mentor - draft a plan of study
- Complete rotations
- Select Doctoral Advisor at end of the semester
- Receive topic areas for Preliminary examination

#### Spring Semester

- Continue course work
- Initiate research work
- Study topic areas for Preliminary examination
- Select Advisory Committee
- Draft plan of study

#### Summer Semester

- Submit annual progress report
- Continue dissertation research
- Continue study of topic areas for Preliminary examination

### Second Year

#### Fall Semester

- Meet with advisory committee and submit plan of study
- Continue course work
- Continue dissertation research
- Preliminary examination

#### Spring Semester

- Complete course work
- Continue dissertation research
- Submit candidacy exam topic (Due May 15)

#### Summer

- Submit annual progress report
- Continue dissertation research
- Candidacy exam topic approval (Due May 30)
- Complete candidacy exam research proposal (Due Aug 1)

### Third Year

#### Fall Semester

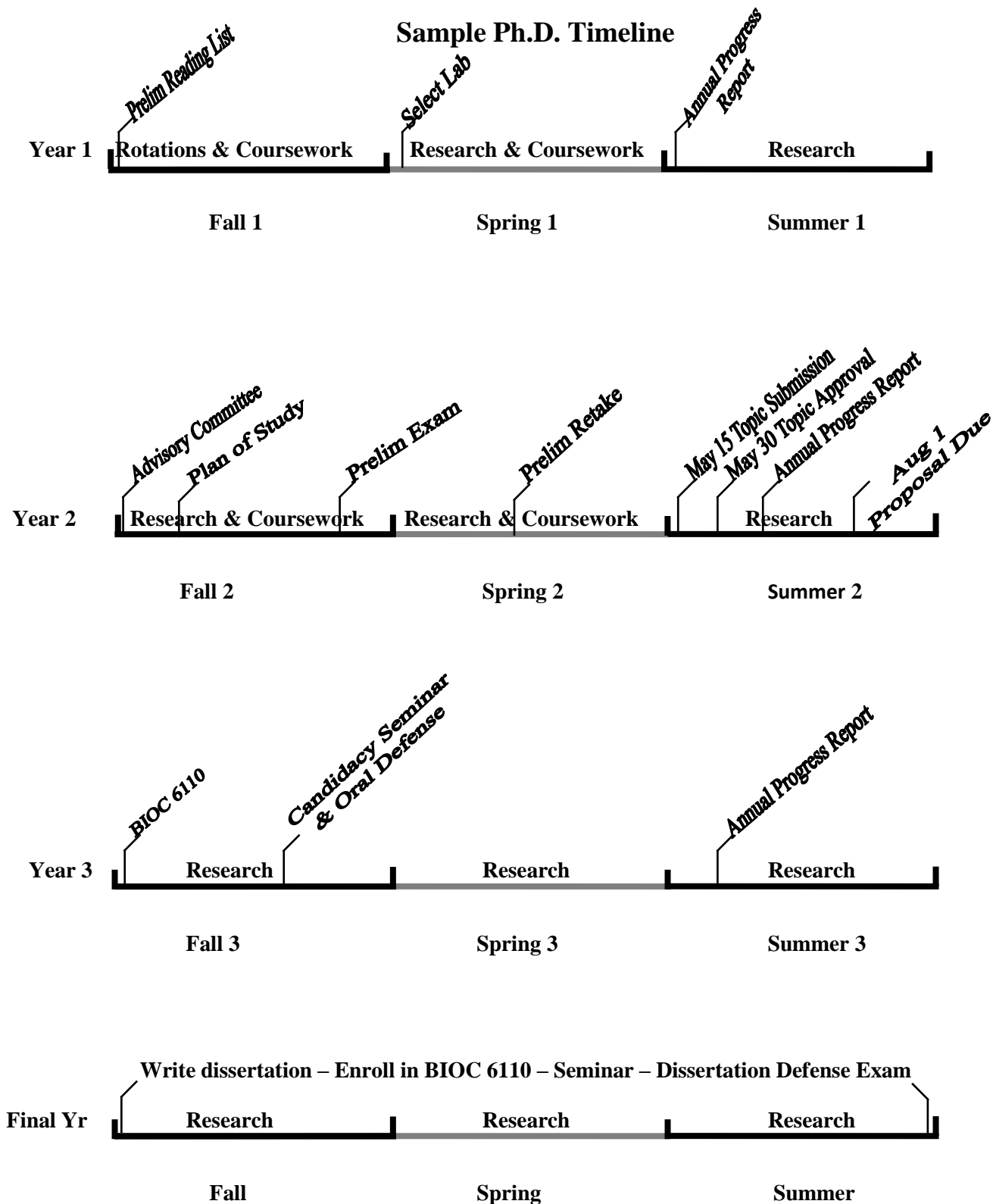
- Candidacy examination (seminar and oral defense)
- Specialized course work outlined in the plan of study
- Continue dissertation research

#### Remaining Semesters

- Continue dissertation research
- Submit annual progress report each summer
- Meet with advisory committee annually
- Begin writing dissertation at least one semester prior to intent to graduate
- Conclude dissertation research, finish and defend thesis

**Begin writing your dissertation at least one semester prior to intended graduation**

## Sample Ph.D. Timeline



## Biochemistry (BIOC) Graduate Course Listing

### 5000 Research

**1-6 credit hours max 6 credit hours.** For M.S. thesis.

### 5002 Biochemistry Graduate Colloquium

Prerequisite(s): Graduate standing. Introduction to graduate research in the Department of Biochemistry and Molecular Biology. Policies for laboratory safety, research compliance, and ethical conduct of scientific research are presented.

### 5102 Molecular Genetics

Prerequisite(s): BIOC 3653 or MICR 3033 and one course in genetics or consent of instructor. To understand, at the molecular level, the organization of genetic material and its functioning in the phenotypic expression of genetic characters. To understand the observational bases for interpretations and theories in molecular genetics. To become competent in the interpretation of research observations in molecular genetics and to develop facility in the design of research approaches to molecular genetic questions.

### 5753 Biochemical Principles

Prerequisite(s): CHEM 3153 or equivalent. Chemistry of cellular constituents; introduction to the chemical processes in living systems. The first in a series of courses for graduate students in biochemistry and related fields.

### 5824 Biochemical Laboratory Methods

**Lab 8.** Prerequisite(s): 4113 or 5753. Lecture and laboratory course in basic biochemistry and molecular biology methods for separation and analysis of biological materials, including chromatography, electrophoresis, and centrifugation, use of radioisotopes, molecular cloning and DNA sequencing.

### 5853 Metabolism

Prerequisite(s): 5753 or 4113. Reaction sequences and cycles in the enzymatic transformations of fats, proteins and carbohydrates; energy transfer, biosynthesis and integration in the metabolic pathways.

### 5930 Advanced Biochemical Techniques

**1-4 credit hours max 10 credit hours.** Prerequisite(s): 5753, 5824 or concurrent registration, and consent of instructor. Lecture and laboratory course in advanced research techniques, designed to supplement 5824. In subsequent semesters, individual research problems pursued in laboratories of Department faculty for six weeks and one credit hour each.

### 6000 Research

**1-15 credit hours max 60 credit hours.** For Ph.D. dissertation.

### 6110 Seminar

**1-2 credit hours max 2 credit hours for Ph.D. or 1 credit hour for M.S. candidates.**

### 6723 Signal Transduction (Fall, odd years)

Prerequisite(s): BIOL 3023, BIOC 3653, 4113 or equivalents or permission from instructor. Topics in this course will classical signal transduction mechanisms including MAP kinase signaling cascades, Protein kinase A, Protein kinase C pathways JAK/STAT pathways, calcium signaling, the cell cycle, programmed cell death, and cell signaling in cancer. This course will have a strong focus on the primary literature and experimental strategies used in modern cell biology to investigate important questions in these areas.

### 6733 Functional Genomics (Spring, odd years)

Prerequisite(s): 3653 or 5753 or 3713 or 3813 or permission from instructor. Principles and techniques of genomics technologies and their applications in basic science and applied animal and plant research. Topics include genome sequencing variation detection, transcriptomics, proteomics, metabolomics, metagenomics, systems biology, forward and reverse genetics.

### 6740 Physical Biochemistry (Fall, even years)

**1-2 credit hours max 2 credit hours.** Prerequisite(s): One semester each of biochemistry, calculus and physical chemistry. Two independent modules dealing with applications of physical chemistry and math to biological phenomena: 1) numerical analyses and selected spectroscopic methods, and 2) thermodynamics and transport properties. *Modules may be taken together as two credits or individually for one credit.*

### 6753 Epigenetics (Spring, even years)

Prerequisite(s): 5102 or 5753 or consent of instructor. Epigenetic regulation involves a complex interplay of DNA and histone modifications, chromatin remodeling and array of small RNAs. The topics include; overview of chromatin structure and gene regulation, DNA and histone modification, role of small RNAs in epigenetics including their

identification, characterization, as well as their roles in plant and animal development and disease, epigenetic-based therapeutics, and the application of RNAi in plants and animals.

**6763 Nucleic Acids and Protein Synthesis** (Spring, even years)

Prerequisite(s): 4113 or 5753. Structure and biological function of nucleic acid containing structures with emphasis on recombinant DNA methodologies, information content, nucleic acid-protein interaction, regulation and rearrangement.

**6773 Protein Structure and Enzyme Function** (Spring, odd years)

Prerequisite(s): 4113 or 5753. Theory of and methods for studying the physical and chemical basis of protein structure and function; and the enzyme catalysis, including kinetics, chemical modification and model studies. Examples from current literature.

**6783 Biomembranes and Bioenergetics** (Fall, even years)

Prerequisite(s): 5853 or consent of instructor. Components, organization and biosynthesis of plasma, mitochondrial and photosynthetic membranes, emphasizing structure-function relationships. Mechanism of metabolites, protons and electrons transport. Energy conservation in bioenergetic apparatus such as mitochondria, chloroplasts or bacterial chromatophores.

**6793 Plant Biochemistry** (Fall, odd years)

Prerequisite(s): 4113 or 5753. Biochemistry of processes and structures of special importance to plants, such as photosynthesis, cell walls, nitrogen fixation, secondary metabolites and storage proteins.

**6820 Selected Topics in Biochemistry 1-3 credit hours, max 15 credit hours**

Prerequisite(s): 5853. Recent Developments in Biochemistry. Subject matter varies from semester to semester; students should inquire at the Department office before enrolling.

## What is O-Key?

O-Key is an information account management system that contains your information as a student or employee at OSU. By logging into O-Key, you can access information such as your username, password, email address, contact information, etc. From the O-Key system, you have the option of using the university-supported email system (Microsoft Outlook/Exchange) or forwarding your OSU email to another account of your choice. You can also edit contact information and add emergency contact information.

### When do I use my O-Key login ?

O-Key username and password are used to access the student computer labs, Student Information System (SIS), the Online Classroom and Community (D2L) and to access your OSU Outlook/Exchange email.

### Activating my O-Key Account

To activate your O-Key account, follow the steps below:

1. Go to: <http://app.it.okstate.edu/okey/>
2. Click on the O-Key Account Activation button on the main page.
3. Enter the first 2 digits of your last name, the last 5 digits of your Social Security Number (or OSU Identification Number), and your date of birth in the appropriate fields. Once all three pieces of information have been entered successfully, you will be guided through an activation wizard that will help you obtain an O-Key username, password, and email address.
4. Upon completion of the activation wizard, it may take up to an hour before your new account is ready to us

## Enrollment

Classes for new semesters are available on SIS one month before enrollment begins. You may begin planning your schedule as soon as the new semester classes are posted on Student Self-Service. Don't forget to schedule an appointment with your advisor.

### Plan Your Schedule

1. Go to the Student Self-Service Home Page (<http://prodosu.okstate.edu/>).
2. Click "Available courses."
3. Click "Lists OPEN sections only (FASTER)."
4. Highlight a Term from the drop-down menu. Click "Select."
5. Highlight a Department Name from the drop-down "Subject" list.
6. Use the box(es) to select days, times, sessions, and class level. Click "Submit."
7. Use the generated list to find the course you want. Write down the course name, call number and meeting time(s) for the section that you want to take.
8. Click "Select Another Search." Repeat steps 5-7 as necessary. Click "Exit" when you are finished.

You may use "List ALL open and closed sections" to identify closed sections of interest to you.

1. Choose a term and click "Select."
2. Highlight a subject from the drop down box. Click "Select."
3. Choose a course from the drop down box. Click "Select."
4. Record the course name, call number, and meeting time(s) for the section you want to take.
5. Click "Select Another Subject" or "Select Another Course."
6. Repeat as necessary. Click "Exit" when you have finished.

### **Meet With Your Advisor**

First-time graduate students have an "Advising Hold" that must be cleared before students may enroll. Contact your advisor or your student services office to find out how to arrange a meeting. During your meeting, your advisor will answer your questions and clear you to self-enroll on the appropriate day.

### **Online Enrollment**

#### **Login**

1. Login to Student Services.
2. Check the term and change it if necessary.  
Highlight "Term" on the navigation bar; click "Select Term" from the pull-down menu.  
Click the link for the term you want.
3. Highlight "Registration" on the navigation bar; click "Drop and Add Classes" from the pull-down menu.

#### **Add Classes**

1. Enter the call numbers (from step 1) in the "Add Class" boxes.
2. Click "Submit".
3. Verify the information.
  - Was enrollment in all sections successful?
  - Variable credit courses are automatically set at one credit hour. The system will require you to review the enrolled hours for any variable credit class. You must update the hours if you want to receive credit for more than one hour.
4. Highlight "Registration" from the navigation bar to return to enrollment, or choose another option on the navigation bar.

#### **Print Your Schedule**

1. Highlight "Registration" on the navigation bar.
2. Click "Detailed Schedule" from the pull-down menu.
3. Click "Print Schedule."

#### **One-Step "Search and Enroll" Function**

You must be cleared to self-enroll.

You must be logged in to Student Self-Service.

1. Highlight "Courses" from the navigation bar; click "Course Section Search" in the pull-down menu
2. Check the "Term" display just above the "Subject" box. Select a different term if necessary
3. Highlight "Term" in the navigation bar; click "Select Term." Click on the desired term link
4. Highlight a Department Name from the drop down "Subject" box
5. Click in the box(es) for the day(s) you want to search
6. Highlight a Start Time from the "Earliest Start Time" drop down box
7. Highlight a Start Time from the "Latest Start Time" drop down box
8. Highlight a "Session" from the drop-down box, if desired. For example, you may limit your search to the first eight week session of a regular term. "Normal Academic Term" does not display any courses that meet for less than sixteen weeks of the term
9. Highlight a Course Level from the "Level" drop down box
10. Click "Submit"
11. Choose the course you want from the generated list
12. Click on the "Call Number" of the course you want. Verify the course and click "OK."
13. Verify that you are correctly enrolled
14. Check your "Currently Registered Classes" list. If you selected a variable credit course, you must also review and update (if necessary) the credit hours
15. Repeat as necessary
16. Print your schedule

#### **Enrolling in Zero Ending (Variable Credit) Courses**

Courses that may be taken for variable credit are designated with numbers that end in zero (for example ENGR 4030). If you enroll in a zero-ending course, you are automatically enrolled for one credit hour. If you want to earn credit for more



than one hour, you must choose the credit hours you desire.

1. Enroll in the class, using the add/drop or one-step enrollment function
2. Click "OK" in the pop up box to transfer to the "complete enrollment" page
3. Type the credit hours in the "Credit Hours" input box
4. Select "Submit"

#### **List of Holds That Prevent a Student from Completing Enrollment**

1. A past due account with the Bursar's Office or a Collections Hold.
2. Academic suspension (contact your Dean's Office).
3. Advising Hold (contact your advisor).
4. Admissions Hold.
5. International Student Office Orientation Hold.
6. Loan Exit Interview Hold or Student Loan Accounting Hold.
7. English proficiency exam (TEP2) Hold.

## **Tuition Waivers**

Graduate Teaching Assistants (GTA's) and Graduate Research Assistants (GRA's) employed 50% FTE (approximately 20 hours per week) are required to take a minimum of six credit hours in the fall and spring semesters, and two hours in the summer. The nonresident and resident portions of all qualifying courses taken will be waived. Courses must be required by your graduate degree program and appear on your plan of study in order to qualify for the tuition waiver(s). You are allowed to be enrolled in a minimum of two hours in the summer 2014 semester and still qualify for tuition waivers (hours of enrollment must be required by the graduate degree). Note: Tuition and fees are separate; you will be responsible for all fees associated with your enrollment.

GTA's employed 25% FTE (10 hours per week) and who started their graduate studies at OSU by the fall 2013 semester are required to take a minimum of nine credit hours in the fall and spring semesters and two credit hours in the summer. The nonresident portion of summer tuition will be waived, and three hours of the resident portion of tuition (during fall/spring) will be waived. Two hours will also be covered in the summer (nonresident if applicable, and resident; providing the hours count towards the graduate degree you're admitted). Note: Tuition and fees are separate; you will be responsible for all fees associated with your enrollment. This tuition waiver program will sunset the end of Spring 2015.

#### **How do I Change My Schedule?**

Courses may be added or dropped via SIS Student Self-Service at any time before the sixth day of Fall or Spring classes. The regular summer session drop date is the third day of classes. Short course drop days are pro-rated; please contact the Registrar's Office for more information. After the last day to add or drop via Student Self-Service, you must obtain a signature from your advisor and deliver the signed request to Registration Services.

#### **How Do I Add A Class?**

The one-step "search-and-enroll" function may be used to add classes. However, when trying to adjust your schedule, it may be more efficient to use the course search functions to identify the class you want to add. When you have identified the course you want to add:

1. Highlight "Registration" from the navigation bar; select "Drop and Add Classes" from the pull-down menu.
2. Type the Call Number of the course(s) you want to add in the box(es) at the end of the add/drop page.
3. Select "Submit".
4. Verify your enrollment.
5. Print your schedule, if desired.

You may use the conditional add/drop feature to change your schedule.

#### **How Do I Drop a Class?**

Courses may be dropped via SIS Student Self Service at any time before the sixth day of Fall or Spring classes. The regular summer session drop date is the third day of classes. Short course drop days are pro-rated; please contact the Registrar's Office for more information. After the drop deadline, you must obtain a signature from your advisor and deliver the drop request to the Registration Services.

1. Highlight "Registration" from the navigation bar; select "Drop and Add Classes" from the pull down menu.
2. Review your "Currently Registered Classes; locate the course you wish to drop.
3. Highlight "Drop" from the drop down box. If no actions are listed, you cannot drop the course. Contact your academic advisor.
4. Select "Submit".
5. Verify that you have dropped the appropriate class.
6. Print a new schedule, if desired

## Biochemistry and Molecular Biology Faculty Research Areas

### **RANDY ALLEN (Ardmore)**

Analysis of the regulatory mechanisms that control abiotic stress-responsive gene expression in plants. Functional characterization of transcriptional and post-transcriptional factors that regulate stress-responsive gene expression and evaluation of potential stress tolerance technologies in crop plants, including cotton. Characterization of gene expression in developing cotton fibers. Functional evaluation of phytohormone signal transduction pathways in the regulation of cotton fiber development. Modification of cotton fiber characteristics using molecular genetic and transgenic technologies.

### **ESTELA ARRESE**

#### **Mobilization of Triacylglycerol Stores in Insects**

Triacylglycerol (TG) is the predominant form of storage of fatty acids and comprises the main energy reserve in all animals. The fat body is the principal site for storage of lipids in insects. Cells store intracellular TG in lipid droplets, which are dynamic organelles with essential functions in the maintenance of energy balance. The organism accesses these stores via the action of lipases in a process controlled by evolutionary conserved proteins that in insects are called Lipid storage droplets (Lsd). We have identified and characterized several proteins located at the center of the regulation of TG metabolism in insects. Of particular importance are the main fat body lipase (TGL), Lsd1 and Lsd2. Our studies are focused in the understanding of mechanism of function of these proteins.

### **PATRICIA CANAAN**

#### **Applied Microarray Analysis, Bioinformatics, Genomics, and DNA/Genome Sequence Analysis**

The Ayoubi lab uses advanced technologies and genomics approaches including DNA microarray analysis, bioinformatics, genomics, EST and genome sequence analysis to study a variety of biological problems. Recent studies include *Anaplasma phagocytophilum* modulation of gene expression in human host cells; specific induction and relief from carbon catabolite repression as two systems involved in expression of genes needed for metabolism of complex polysaccharides; and gene expression patterns during carbon deprivation and pectin metabolism by the filamentous fungus *Aspergillus nidulans*. Bioinformatics tools such as PipeOnLine and GenePix Auto-Processor have been developed to assist in automated processing of large-scale biological data. PipeOnLine is a web-based integration of tools designed to process DNA sequence data and generate online public and private databases. GenePix Auto-Processor (GPAP) is a web-based interface for second level processing and statistical analysis of primary expression data obtained from microarray image processing.

### **JUNPENG DENG**

#### **Structure-Function Studies on Macromolecules by X-Ray Crystallography**

Determining the three-dimensional structure of proteins at high-resolution by x-ray crystallography is a powerful approach to investigate and understand the biochemical function of proteins. In our lab, we are interested in structure-function studies on a few proteins with significant biomedical potential by using x-ray crystallography in combination with various biophysical and biochemical approaches: 1) Human leucine rich repeat kinase 2 (LRRK2), mutations in which are the most common cause of Parkinson's disease. Our goal is to unravel the mechanisms of the pathogenic mutations and the unique intra-molecular signaling in LRRK2. 2) IL-18, IL-18BP and receptors that are involved in inflammatory and autoimmune diseases. 3) Other important proteins such as poxvirus host range proteins and prophenoloxidase involved in insect innate immune response.

### **JOHN GUSTAFSON, Department Head**

The research in Professor Gustafson's laboratory focuses on an attempt to understand how the human pathogen *Staphylococcus aureus* resists the action of antibiotics and other types of antimicrobial substances. Dr. Gustafson has been successful at securing over three million dollars in grant funding to support his research on antimicrobial resistance in bacterial pathogens. He has also trained 61 undergraduates in a biological safety level 2 laboratory and has completed 12 Masters and 7 Ph.D. students.

### **JUDY HALL**

I teach the biochemistry laboratories, making certain all experiments in the teaching laboratory for graduate, undergraduate, and non-biochemistry majors run correctly, resulting in a positive lab experience for the student. Research, during the summer, is in the laboratory of Robert Matts.

## **STEVE HARTSON**

### **Dissecting the Structure and Function of an Anti-Cancer Drug Target**

As one of the major cellular chaperones, Hsp90 plays diverse roles in supporting and regulating the proteins that control cell growth and division. Hsp90 function itself is regulated by a large diverse set of subunits. Previous work, in collaboration with Dr. Robert Matts, focused on the roles of Hsp90 in supporting kinase function. Dr. Hartson's team used gel-based "proteomics" techniques and mass spectrometry to discover new human Hsp90-binding proteins. Some of these new subunits have been described in yeast, while others are novel. Many of these new subunits are associated with the mitotic spindle, suggesting a role for Hsp90 in the tubulin-based cytoskeleton network. Future work will be directed at dissecting the function, structures, and mechanisms behind these new protein partnerships. Techniques will include molecular biology, cell culture and microscopy, and high-performance mass spectrometry.

## **PETER HOYT**

### **Assessment of Epigenetic and Metabolic Effectors in Whole-Cell Biology Using Advanced “-Omic” Technologies**

Research includes identifying metabolic effects of low dose (<10cGY) ionizing radiation in skin of different inbred mouse strains. Strains show remarkable variability in genome-wide transcription affecting humoral immunity, cell cycling, apoptosis and the intracellular signaling cascade. Using microarrays and bionanotechnology, we are examining the response of cells impaled onto vector-derivitized carbon nanofibers. Surviving impaled cells are spatially fixed and express proteins via this transfection method. A novel mechanism of cellular damage assessment associated with membrane healing is being investigated. Other interests include identifying control of cell determination events during differentiation of pluripotent (hematopoietic) and omnipotent (embryonic) mouse stem cells. Genes and miRNA involved in determination will be studied simultaneously on microarrays. Finally, novel informatics and array technologies are being developed for high-throughput cellular analyses.

## **RAKESH KAUNDAL**

### **Artificial Intelligence, Computational Algorithms for Biological Discovery**

Following recent advances in technology and the development of ultra-high throughput research, the field of Biotechnology is beginning to suffer from data overload, and thus, applications of Bioinformatics & Computational Biology have expanded with these so-called ‘-omic’ technologies. This discipline now sits as an umbrella over Biotechnology. The Kaundal Bioinformatics Laboratory (KBL) is engaged in analyzing such large-scale sequence data, developing novel computational tools / algorithms and incorporating them into bioinformatics resources / databases. KBL is located on the first floor of OSU’s new establishment, the Henry Bellmon Research Center. Before joining OSU, Dr. Kaundal served at The Samuel Roberts Noble Foundation, Ardmore (OK) for about four years where he was actively involved in the basic plant research aimed at software development in computational biology, bioinformatics, and genomics for biological discovery. His research interests span a range of topics in applying statistical pattern recognition, artificial intelligence and machine learning technologies in the area of agricultural biosecurity, metagenomics, regulatory mechanisms of gene expression, genome-wide host-pathogen interaction networks and genome annotation for functional studies. He has developed a range of bioinformatics tools that are useful within the real biological situations. Currently, his lab is involved in developing novel computational tools & algorithms for pathogen detection and discrimination, identification of species-specific signatures, and using artificial intelligence to predict biosecurity threats. For example, discriminating pathogen genotypes in a fundamentally different way from distance-based and BLAST algorithms and instead, using the Neural Networks, Support Vector Machine or Decision Tree classifiers to build patterns from genome regions (e.g. DNA barcodes) that are under selective pressure; and ultimately incorporating them into a database(s) / visualization tool(s). Dr. Rakesh Kaundal has presented his research work at various international conferences and published in peer-reviewed high impact journals. He also serves on various program committees of scientific peer-reviewed journals and invited to chair sessions in international conferences on computational biology/bioinformatics.

## **RAMAMURTHY MAHALINGAM**

### **Oxidative Signaling in Plants**

Oxidative signaling mediated by reactive oxygen species (ROS) is a central component of the plant responses to biotic and abiotic stresses. Identifying and characterizing key genes and metabolites involved in ROS perception and signaling is the goal of this research. Understanding the oxidative signaling pathway will provide rational targets for improving tolerance to multiple stresses in plants. We are using *Arabidopsis thaliana* and *Medicago truncatula* as model plants. Ozone, a major atmospheric pollutant and global climate change factor is our current emphasis. This multi-disciplinary research entails functional genomics, bioinformatics, genetics, biochemistry and molecular biology. The knowledge gained from these model systems will ultimately be useful in translational research for engineering crop plants with improved tolerance to multiple stresses.

## **ROBERT MATTS**

### **The HSP90 Chaperone Machine, Protein Synthesis and Folding, and Drug Discovery**

The Hsp90-family of proteins function as molecular chaperones that are ubiquitously expressed and required for eukaryotic cell viability. Hsp90 has an obligatory role in facilitating post-translational maturation of numerous proteins that regulate many signal transduction pathways. Forty-eight Hsp90-dependent clients are directly related to oncogenesis and are distributed among all six hallmarks of cancer. Because so many oncogenic proteins are dependent upon the Hsp90 chaperone machinery for conformational maturation/activation, inhibitors of Hsp90 provide a mechanism for the simultaneous derailment of multiple signaling cascades. Consequently, Hsp90 has emerged as an exciting new target for the development of anti-tumor agents. Our studies focus on: 1) determining the mechanism of Hsp90-facilitated folding of client targets; 2) characterizing novel Hsp90 co-chaperones and client proteins; 3) discovering pharmacological inhibitors of Hsp90 function and their mechanism of action; and 4) discovering mechanisms that control protein synthesis involving the phosphorylation of the alpha-subunit of eukaryotic initiation factor 2.

## **ULRICH MELCHER**

### **Viral Evolution, Biodiversity and Ecology**

The molecular evolution of viruses is fascinating, relevant to the evolution of living organisms, a determinant in pathogenesis by viruses, and amenable to detailed study in the laboratory. Evolution is the product of variation and selection. Genetic recombination is a major source of variation for evolutionary selection. The mission of the lab is to explore the importance for evolution of interactions of viruses with one another and with genomes of their hosts. Among the topics being explored are: understanding the role of recombination in the origin and evolution of viruses; documenting interaction between viral genomes such as recombination, competition and synergy; determining the effect of viral recombination on viral pathogenicity; understanding the role of viruses in ecosystems; and development of methods to determine the diversity of extant viruses and their distribution.

## **RITA MILLER**

### **The Cytoskeleton and Positioning of the Mitotic Spindle**

In eukaryotic cells, the mitotic spindle is the cytoskeletal apparatus that segregates the genetic information contained in chromosomes to each of the daughter cells. The placement of mitotic spindle for a large number of cell types is actually found off-center. Asymmetric positioning of the mitotic spindle is an active process that permits the asymmetric distribution of cell-specificity determinants and the establishment of different cell fates. Incorrect spindle positioning can result in genetic instability due to chromosomal mis-segregation, which is an important component of many cancers. The work in my lab is focused on elucidating the molecular mechanisms that control spindle positioning. The Miller laboratory uses the model organism *Saccharomyces cerevisiae* (budding yeast), and is particularly interested in the post-translational mechanisms that regulate spindle positioning.

## **ANDREW MORT**

### **Structure of Plant Cell Walls**

Dr. Mort's research group is determining key aspects of the structure of plant cell walls. Novel chemical methods and enzymes, most of them cloned in *Pichia pastoris* are used to cleave cell wall polymers at specific points. The fragments released from the cell walls are purified by high performance liquid chromatography and then characterized by mass spectrometry and high field NMR spectroscopy using the excellent facilities that are shared with the Chemistry Department at OSU. Students in Dr. Mort's laboratory are given hands on experience with NMR, mass spectrometry and HPLC. Most of the carbon in biomass is in the form of polysaccharides. Dr. Mort and his collaborators are investigating improved enzyme systems for the conversion of biomass to monosaccharides for subsequent fermentation into fuels or chemicals. The experience gained in Dr. Mort's laboratory readies a young scientist to work in the important and expanding areas of glycoprotein and polysaccharide characterization in plants, animals, and bacteria.

## **PATRICIA RAYAS-DUARTE**

### **Understanding the Role of Gluten Proteins in the Biochemical and Rheological Properties of Wheat and its Products**

Our research focus is in evaluating specialized biochemical and rheological properties of wheat cultivars with emphasis in gluten proteins and their role in key processing quality parameters of interest to the baking industry. We work closely with the wheat breeders, cereal scientists and wheat industry around the world to provide wheat breeders with relevant information about the structure and behavior of doughs obtained from selected varieties and breeder lines. We also seek to understand the basic properties of elasticity and plasticity of wheat dough and other cereal based products as a function of key quality parameters and other treatments of relevance to the industry, and to improve methods for the

interpretation and prediction of baking and other processing properties relevant to present demands of customers and processors.

### **DONALD RUHL**

Epigenomic information defines unique patterns of gene expression to maintain cellular identity in an organism. Research into epigenetic mechanisms, including nucleosome positioning, DNA methylation, histone modifications and histone variant deposition, has identified aberrations within these programs that contribute to alterations in gene expression that can manifest as an oncogenic phenotype, i.e. a change in cellular identity. Of particular interest are the molecular mechanisms of ATP-dependent remodeling complexes in the accurate positioning of nucleosomes to further understand causality in cancers and aid in the expansion of treatment options. Through the application of biochemical, cell-based and genomic approaches in mammalian-based systems, I am interested in understanding the process of nucleosome positioning and its role in transcriptional regulation in both the normal and diseased states.

### **JOSE SOULAGES**

#### **Biochemistry and Biophysics of Lipids and Lipoproteins**

We study some aspects of transport degradation, and synthesis of lipids. *Cholesterol*: The concentration of cholesterol in human plasma is related to the probability of developing atherosclerosis and cardiovascular disease. We are studying the mechanisms of cholesterol release from adipocytes to extracellular acceptors such as human high density lipoprotein (HDL) and apolipoprotein A-I (apoA-I). *Triacylglycerol*: Triacylglycerol metabolism is highly related to the development of obesity and diabetes. A major goal of our studies is to understand the mechanisms of regulation of the rates of synthesis and degradation of triglyceride (TG) in adipose tissue. In collaboration with Dr. Estela Arrese we are studying the mechanisms of regulation of the rates of triacylglycerol synthesis and degradation in adipocytes (main cells present in adipose tissue) from mouse and insects.

### **RAMANJULU SUNKAR**

#### **MicroRNA-Guided Post-Transcriptional Gene Regulation**

Recent discovery of microRNAs with regulatory roles has uncovered an active role for RNA in regulating gene expression besides its passive intermediary role 22-nt non-coding regulatory RNA~between genes and proteins. MicroRNAs are molecules processed from the longer transcripts adopting hairpin-like structures. They can suppress the target gene expression at the post-transcriptional level by causing the degradation of the mRNA or inhibiting the protein production. MicroRNAs play critical roles in plant growth and development, stress responses and in nutrient homeostasis. We focus on identification of microRNAs and characterization of their roles in plants. The findings from such studies will contribute to our basic knowledge of plant biology involving post-transcriptional regulation of gene expression and have potential for biotechnological applications.

### **KEVIN WILSON**

#### **Antibiotics, Resistance, and the Translational Machinery in Bacteria**

Antibiotics are some of our most powerful and valued drugs, virtually eradicating previously dreaded diseases such as scarlet fever, tuberculosis, and bubonic plague. Ironically, only a few new antibiotics have been introduced since the 1960s. A crisis looms on the horizon with old antibiotics losing their effectiveness due to the rise of multidrug-resistant bacteria, chronic infections, and immune-compromised patients. Resistance arises from two primary sources: from bacteria harboring mobile resistance genes that can be spread to other cells; and from 'persister cells', which are dormant variants of regular bacteria that are highly tolerant to antibiotics. The rise in resistance is exacerbated by our ubiquitous use of antibiotics in everything from medicine to agriculture. Furthermore, antibiotics indiscriminately attack harmful and helpful bacteria in our gastrointestinal tracts and societies. Antibiotics from natural sources (plants, fungi, and other bacteria) commonly target bacterial ribosomes, which translate mRNAs into proteins. This translational machinery is also a source for acquiring resistance to antibiotics. The highly conserved nature of this machinery facilitates our broad use of antibiotics, yet it also promotes resistance in bacterial populations. Translation and antibiotics are connected to bacterial physiology, growth and multiplication. Yet there is a significant lack of information about how ribosome-targeting antibiotics affect bacterial physiology. To begin to fill this void, my lab is investigating how antibiotics perturb the translational machinery in bacterial cells. Using novel methodology, we are purifying the full translational machinery from both harmful and helpful bacteria. We are quantitatively assessing the components of this machinery and other putative factors connecting it to bacterial physiology. We are comparing the effects of antibiotics on the composition and dynamics of the translational machinery. These studies will reveal how antibiotics that target the ribosome dismantle bacterial physiology, leading to bacterial death. These insights will be a critical prerequisite for the development of new more effective and specific antibiotics. And they prepare us for the new more deadly drug resistant bacteria that will most assuredly arise in the future.

## Adjunct Professors on OSU Campus

Adjunct professors collaborate with Departmental faculty in research projects and can serve as a major adviser to graduate students. The adjunct faculty directs original research that has biochemical or molecular biological components. Before a graduate student of the Department begins thesis research under the direction of adjunct faculty, approval of the research project by the Department Head is required.

**ROBERT BURNAP**, Microbiology and Molecular Genetics, College of Arts and Sciences  
Molecular Genetics and Biophysical Analysis of Photosynthesis

**KENNETH CLINKENBEARD**, Veterinary Pathobiology, College of Veterinary Medicine  
Protein Structure-Function Relationships, Biochemical Mechanisms of Disease, Bacterial Toxinology,  
Leukocyte Function, Systemic Mycoses, Clinical Chemistry, Hematology and Cytology

**UDAYA DESILVA**, Animal Sciences, Division of Agricultural Sciences and Natural Resources  
Adipose tissue in its amount and anatomical distribution markedly differ among individual animals within a species. Obesity is a growing problem in humans whereas the deposition of intramuscular fat or marbling is a highly desired characteristic in beef cattle. We strive to understand the genetic regulation of adipogenesis in beef cattle using *in vivo* and *in vitro* techniques and functional genomic approaches. Microorganisms that live within the intestinal tract play a pivotal role in nutrient digestion of an animal. However, less than 1% of these organisms could be cultured and readily characterized. As such the role microbes play in an animal's well-being is not well understood. Our goal is to understand the functional and population dynamics of intestinal microflora using high-throughput functional and meta-genomic analyses.

**HAOBO JIANG**, Entomology and Plant Pathology, Division of Agricultural Sciences and Natural Resources  
Serine Protease (SP) and Serine Protease Homologous (SPH) Proteins in *Drosophila melanogaster*  
A multiple sequence alignment of the glucanase-like proteins in invertebrates  
Sequence alignment of the catalytic domains of Manduca sexta HPs and other arthropod serine proteinases with known functions.

**JERRY MALAYER**, Professor and Associate Dean for Research and Graduate Education  
Physiological Sciences, College of Veterinary Medicine  
The specialized functions of differentiated cell types in complex, multi-cellular organisms are the result of specific expression of subsets of genes present in the genome. The processes that establish and maintain these patterns of expression begin in the earliest developmental stages. We are interested in the combinatorial diversity of the molecular interactions that control cell-specific gene expression. The members of the family of steroid hormone receptors have long been an important model for the combinations of protein-protein and protein-DNA interactions underlying control of gene expression in specific cell types. These receptors behave as ligand-induced activators and repressors of gene transcription, which have varied, important functions in development, metabolism, and reproduction throughout a wide range of evolutionarily-diverse species. The tools for monitoring changes in gene expression in response to steroid hormones, as well as in response to other external stimuli, can also be used to characterize pathological changes in cells and tissues; and thus become powerful diagnostic tools.

**ROLF PRADE**, Microbiology and Molecular Genetics, College of Arts and Sciences  
Molecular genetics and cell biology of fungi (*Aspergillus nidulans*). My research focuses on the development of large-scale molecular tools and the genetics of sensory mechanisms in *Aspergillus nidulans*. We have made contributions to two model processes; the stress response and the question of carbon source regulation, specifically the genetics of recognition of complex carbon sources. Currently we are involved in a proteo-genomic effort to determine biomass degrading enzymes which function at extreme high temperatures (95 °C). These enzymes are useful to further engineer crop plants the biomass source for biofuel production.

**KAY SCHEETS**, Botany, College of Arts and Sciences  
Focusing on how plant RNA viruses infect, replicate, and move within monocots, and how these viruses can be used as tools. We have studied the synergistic interaction of *Wheat streak mosaic virus* (WSMV) with *MaiZe chlorotic mottle virus* (MCMV), but most recent work involves MCMV and *MaiZe necrotic streak virus* (MNeSV), which are both members of the family *Tombusviridae*. Using reverse genetics to introduce mutations into the cDNA clones of MCMV and MNeSV, the effects of the mutations on replication in protoplasts, and on the ability of the virus to infect and move throughout the plant can then be assessed. These clones are also being used to determine the methods of viral gene expression and regulation such as their use of 3' cap-independent translational enhancers to efficiently express their uncapped RNAs. A

new project involves constructing viral vectors for virus-induced gene silencing in maize and other monocots to assist in identifying the functions of monocot genes.

**MILLION TADEGE**, Department of Plant and Soil Sciences, Division of Agricultural Sciences and Natural Resources  
Sustainable plant biomass feedstock production without affecting food crop productivity is a major challenge for a bioenergy based economy. We seek to understand the molecular basis of biomass accumulation by dissecting key developmental programs and genetic networks to be able to manipulate biomass feedstock yield. We are specifically interested in identifying key transcription factors that invoke a systems level response and integrate developmental programs in leaf development, flowering time, plant height, and tiller number. Our work in *Medicago* and tobacco suggests that some transcription factors may serve as ‘master switches’ by integrating developmental and hormonal signals with environmental conditions. We strive to understand the mode of action of such biomass network regulators and use the information to alter biomass in biofuel crops to improve yield. We employ multidisciplinary genetic, genomic and biochemical approaches to uncover these complex genetic interactions primarily in sorghum and switchgrass. We also use *Medicago*, tobacco and *Arabidopsis* as tools in the lab to address some of the basic questions. We are embarking on developing a deletion mutant population in sorghum that can be used as a model functional genomics resource to address fundamental questions in high biomass producing C4 grasses.

**GLENN ZHANG**, Animal Sciences, College of Arts and Sciences, Division of Agricultural Sciences and Natural Resources

Molecular mechanisms of antimicrobial peptides in the pathogenesis of inflammatory bowel disease by employing a variety of cell signaling and functional genomics approaches. Functional genomics approaches to the bovine respiratory disease complex by studying and manipulating host-pathogen interactions using DNA microarray and RNA interference.

## DNA & PROTEIN RESOURCE FACILITY

### Purpose

The Facility stimulates Biomolecular Research at Oklahoma State University and throughout Oklahoma by providing instrumentation and technical expertise that are not readily available to the individual investigator. The Facility performs specialized biochemical analyses, manages a pod of multi-user equipment, provides consultations, and conducts hands-on workshops in the utilization of specific technologies. The Facility operates as a non-profit entity, providing services at or below actual costs.

### Major Services

- DNA Sequencing
- DNA Fragment Analysis
- Mass spectrometry
  - ✓ mass determinations
  - ✓ protein identifications
  - ✓ differential protein expressions
  - ✓ posttranslational modifications
- Robotic liquid handling

### Major multi-user equipment

- DNA Analyzer [48-capillary 3730 (Applied Biosystems)]
- Electrospray tandem mass spectrometer [LTQ Orbitrap XL (ThermoFinnegan) equipped with a nano-LC (Eksigent) and a nanospray ion source]
- MALDI-TOF mass spectrometer [DE-PRO (Applied Biosystems) with reflector, CID module]
- Proteomics workstations (Mascot, Mascot Server, Mascot Daemon, Sequest, Bioworks, Peaks, Scaffold, etc.)
- Real-Time Polymerase Chain Reaction (Applied Biosystems 7500)
- Robotic solution handling
  - Biomek 2000 Laboratory Automation Workstation (Beckman-Coulter)
  - Symbiote MALDI plate spotter (Applied Biosystems)
- Digital imaging stations
- Typhoon Trio fluorescence gel imager with DeCyder2D, ImageMaster 2D Platinum, and ImageQuant TL software applications (GE Health)
- AlphaInnotech HP Imager for high-sensitivity, high resolution chemiluminescent applications, with printing, export, and quantitation
- Biotek Synergy H1 Plate Reader for UV/VIS/Fluorescence Quantitations using a wide range of Ex/Em Wavelengths
- Dionex HPLC (microbore) for various chromatographic separations
- AlphaInnotech HP Imager for routine fluorescent gel documentation, with thermal printing, file export, and quantitation
- Nano-Calorimeter and BindWorks software (Calorimetry Sciences Corp.)

- Akta Explorer FPLC (GE Health)
- 2-DE Gel Electrophoresis [MultiPhor II /Ettan Dalt6 (GE Heath), Protean IIxi (BioRad), and accessories]
- Hunter 2-D Peptide Mapping Apparatus

#### **Minor multi-user equipment**

DNA and protein speed vac's, UV/vis spectrophotometer, gel dryer, hybridization incubator, vacuum oven, electroporation, thermal cyclers (7, including tube, plate, and gradient), DNA fluorometer, baking oven, Stratilinker, incubators, microfuges, shakers, misc. power supplies & electrophoresis equipment, X-ray exposure cassettes, biological computing workstations, E-pure water system visible and fluorescent plate readers, automated X-ray film processor (Kodak) .

#### **Training**

Workshops in Proteomics/Mass Spectrometry

Individual consultations (DNA, RNA & protein techniques)

#### **Personnel and Contact Information:**

Dr. Steve Hartson, Facility Director	(405)744-6191	<a href="mailto:shartson@okstate.edu">shartson@okstate.edu</a>
Janet Rogers, Lab Manager & Mass Spectrometry Specialist	(405)744-9327	<a href="mailto:jrogers@okstate.edu">jrogers@okstate.edu</a>
Lingjin Xiang, DNA Sequencing and Fragment Analysis Specialist	(405)744-6202	<a href="mailto:lingjin@okstate.edu">lingjin@okstate.edu</a>

## **ARRAY & BIOINFORMATICS CORE FACILITY**

#### **Purpose**

The core facility provides service and training for custom microarray fabrication, image acquisition, technical support, and recommendations for all aspects of microarray-base studies including labeling, hybridization and data analysis while providing consultation for experimental design, projects, and proposal development. High-density DNA microarrays for whole genome or simultaneous multiple genome transcription analyses are enabled as well as custom arrays in support of genotyping, ecological, and forensic studies. Non-contact inkjet methods are available for arraying biomolecules, live cells, beads, or patterning substrates. The Core Bioinformatics Facility, in conjunction with the OSU High Performance Center, provides bioinformatic support to researchers across campus, including access to the latest software for data acquisition and analysis. Full-time technical specialists are employed to assist researchers.

#### **Major Services**

- DNA microarray production of custom libraries
- Next Generation 454 Pyro-Sequencing and Genomic, Metagenomic, Epigenetic, and Functional Assembly and Annotation of Genomes and Transcriptomes.
- Functional annotation, pathway analysis, and metabolic profiling
- Training in DNA microarray technology (from production of arrays to analyses)
- Robotic nanoliter liquid handling
- Instrumentation and training in production of high-quality RNA
- Extensive bioinformatics services from experimental design to data analysis

#### **Major multi-user equipment**

- GeneMachine OmniGrid 100 environmentally-controlled pin-spotting system
- Roche 454 – Junior Pyro-Sequencer
- NanoDropII high-throughput nanoliter dispensing liquid handling system for micro-assays and macro arrays
- Molecular Devices/Axon four-laser confocal microarray scanner
- Packard Biosciences ScanArray 3000 scanners with associated data acquisition software
- ICX-Nomadics SensiQ surface plasmon resonance instrument

#### **Minor multi-user equipment**

- BioMicro MAUI hybridization system with active mixing of target mix during hybridization
- SciGene Hybex Microarray Incubation system for multiplexed arrays and high-throughput hybridizations
- Agilent BioAnalyzer for both RNA and DNA
- NanoDrop ND-1000 spectrophotometers and ND-3300 fluorospectrophotometer
- RNA isolation equipment, hybridization incubator and other preparative equipment
- Diagnode Biodisruptor and Digilab Hydroshear

**Software:** Most major open source – “omics” software packages are supported. Additional commercial software include: GenePix v6 & v7, ScanArray, ScanAlyze, Genemapper, and Complete BioTeam inquiry sequence analysis package. For more information see <http://bioinfo.biochem.okstate.edu>.



## Training

Bioinformatics Workshops  
Workshops in DNA Microarray Technology  
Individual Consultations

## Personnel and Contact Information

Dr. Peter R. Hoyt, Director	(405) 744-6206	<a href="mailto:peter.r.hoyt@okstate.edu">peter.r.hoyt@okstate.edu</a>
Yan Song, Bioinformatics Research Specialist	(405) 744-6209	<a href="mailto:yang.song@okstate.edu">yang.song@okstate.edu</a>
Dr. Hongjin Hwang, Sequencing Research Specialist	(405) 744-6202	<a href="mailto:hongjin.hwang@okstate.edu">hongjin.hwang@okstate.edu</a>

Information available at: <http://microarray.okstate.edu> and [bioinformatics.okstate.edu](http://bioinformatics.okstate.edu)

## Appendix I

# Biochemistry and Molecular Biology Office Policies & Procedures

Office: 246 NRC, (405) 744-6189 <http://biochemistry@okstate.edu>

## Home Mailing Address

It is extremely important that we keep up with your current home mailing address at all times. If your address has changed since last semester or if you are a new student, please be sure we have your current address. If your address changes during the semester, you are required to notify the office staff; then you need to notify the Graduate School, Payroll, Human Resource Services (HRS) and the Registrar's Office. For International students, according to INS policy, a "change of address" form must be filled out each time there is a change of residence. Forms are available in the Biochemistry and Molecular Biology office. This is YOUR responsibility. It is also helpful if a current telephone number is provided to the BMB office.

## Keys

Keys are obtained from the Biochemistry and Molecular Biology office, 246 NRC. Students checking out keys will pay a \$5.00 refundable deposit for each key. Upon graduation, or departure, your keys must be returned to the Biochemistry and Molecular Biology Department office.

**NOTE: Students are responsible for making sure office/lab doors are locked and lights are turned off.**

## Receipt of Paychecks

Graduate Research Assistants, Fellows, and Teaching Assistants get paid monthly on the 1st day of the month. Paychecks are distributed by direct deposit to your bank account through the University. You may fill out a direct deposit form at the Biochemistry and Molecular Biology Department office. To view your pay stub, visit the OSU Web site <http://webemp.okstate.edu/> and click on the link. Follow the directions posted on that sight to view your pay stub. You will need your student ID number and PIN number which can be obtained in the Admissions and Records Office of the UALR when you present a photo ID.

## Photocopying

The copy machine is available on the 2<sup>nd</sup> floor 246 NRC. Photocopying is subject to copyright laws; it is your responsibility to be aware of them. You can access the copier with a code provided by your PI. THE PHOTOCOPY MACHINE USE SHOULD BE LIMITED TO ACTIVITIES APPROVED BY YOUR PI.

## BMBGSA Lounge

260 NRC is the BMBGSA (Biochemistry and Molecular Biology Graduate Student Association) Lounge.

## Thesis/Dissertation Expenses

Students are responsible for all costs pertaining to the preparation and finalization of their thesis/dissertations (copies/binding, special paper, etc.).

## Travel

**Travel arrangements must be cleared with appropriate office staff first.** Provide the appropriate support person in the Biochemistry and Molecular Biology office with all of your travel information. This is initially done by filling out a travel request form (blue slip). When you've returned from a trip, you must complete a travel voucher (pink slip), available from the Department. There will not be any out of pocket expense reimbursement until pink slip is completed and returned to the appropriate support person with all of your original receipts.

## Mail Boxes

Mail is delivered to a single location in room 246G NRC at approximately 9:00am Monday through Friday. Check these boxes regularly. Packages are delivered throughout the day. When sending packages via UPS, FedEx or DHL, you must fill out a shipping form from mail services; either have mail services pick up the package or take it to mail services yourself. Permission from a faculty member is required before sending any packages.

### **P-Card Information**

Please obtain written permission from your P.I. before requesting a university purchasing card (p-card). See appropriate office personnel for p-card request paperwork, explanation of p-card logs and reporting procedures, and information about p-card training.

## *Appendix II*

### **Graduate Assistantships**

#### **Paperwork**

Go to the Department of Biochemistry and Molecular Biology office and complete the following forms so you can be put on the payroll:

- Federal and State tax forms
- I-9 form. You will need to show two forms of identification such a driver's license and social security card. Foreign students will need passports and other certificates.

If you have worked on campus during the previous year, you may not need to complete all of the forms.

International students on F-1 or J-1 visas also must complete the Certificate of On-Campus Employment Eligibility from the International Student Office and return it to the Graduate College. You will not be paid until you have returned the necessary forms.

#### **Payroll Signup**

**International Students:** Prior to signing up on payroll you will need to get a Social Security Letter from the office, 246 NRC. Ten days after arriving in the United States you will make application to the Social Security office, 518 Lakeview Road, Stillwater. You will receive your social security card within two weeks of application.

#### **International Student Documentation for Payroll Signup**

- Social Security Card
- Passport
- Work Permit (ISS 076 Student Union will provide this for you)
- I-9 (ISS 076 Student Union will provide this for you)
- W-4 (ISS 076 Student Union will provide this for you)
- Voided Check from Checking or Savings Account

#### **Domestic Student Documentation for Payroll Signup**

- Social Security Card
- Driver's License/or other approved photo ID
- Voided Check from Checking or Savings Account

#### **Payroll Advice**

OSU processes more than 180,000 paychecks to approximately 17,000 individuals each year. Each paycheck requires numerous transactions and calculations which could involve earnings, taxes, deductions, and benefits. Although the system provides many checks and balances, errors can occur. **As part of the payroll process, OSU provides the Payroll Advice for employees to review and verify data immediately. Failure to notify Payroll Services or Human Resources of problems may delay your pay or result in benefit problems.**

#### **The Oklahoma PayCard**

The Oklahoma PayCard provides a new convenience for state employees who do not have a bank account for direct deposit of their paycheck. Now, instead of being forced to find a place to turn your paycheck into cash, you will have the electronic convenience of the Oklahoma PayCard.

Oklahoma law (74 O.S. 292.12) requires that all new state employees use direct deposit to receive their pay. All current state employees are required to use direct deposit by June 30, 2007. Employees who do not have an account at a financial institution to receive their pay can use the Oklahoma PayCard.

### **How to Sign Up for a PayCard (with approval of advisor)**

To sign up for the PayCard, simply fill out a direct deposit form and mark the PayCard option. Be sure to fill out all the demographical information as well. Submit this deposit form to Payroll Services, 409 Whitehurst. Your PayCard will be sent to you via mail from MoneyNetwork. **When you get your PayCard, please notify Payroll Services so that we can start funding your PayCard.** Until the PayCard is funded, you will receive a paper check via the mail.

### **E-mail notifications**

An e-mail notification will be sent to all employees processed in a payroll calculation. The e-mail will inform the employee that he/she has been included in a particular payroll calculation with a specified issue date. It will also include the net pay along with the check distribution/bank name. A link to Web for Employees will be provided on the e-mail or employees can access Web for Employees directly through the internet at: <http://prodbosu.okstate.edu> The e-mail will also contain a section of Notifications and Announcements. This will contain important information about pay and benefits.

### **Accessing Web for Employees**

Web for Employees can be accessed by using an employee's OKEY user-id or e-mail address and password or by entering his/her Employee ID and PIN (Personal Identification Number) at the Web for Employees Home Page. The default PIN is set to the employee's birthday (mmddyy). However, the employee will be required to change the default PIN upon first entering Web for Employees.

To access pay information for a particular payroll, click on the Payroll tab, then click on Payroll Advice. Select the Check Year and click on the Select button. Select the Check Date and click on the Select button. To view leave information, click on the Employment tab, then click on Leave Balances. This will provide the employee with a table of vacation, comp time, sick leave, and extended sick leave balances.

You will be paid on the last working day of each month. If the last day falls on a weekend, payday will be on the following Friday. All pay is distributed by direct deposit to your bank account through the University. You may fill out a direct deposit form at the Biochemistry and Molecular Biology office in 246 Noble Research Center at the time of your hire. The only exception is the month of December. In December you will be paid on the last working day before the Christmas break, and your next payday will not come until the end of January. This is about a six week gap so it will be imperative for you to budget your finances to allow for the extra time between pay periods.

### **Work Assignment**

Your hours of work depend on the arrangements you make with your PI. Records are not sent to the Graduate School or payroll office. You are accountable to your PI for your time and may be requested to complete a time log for internal Departmental use.

### **Billing**

Tuition scholarships will be credited to your Bursar account during the registration period. You are responsible for all required fees. Be sure you have paid your portion or arrange for deferred payment with the Bursar's Office before the payment deadline. If registration fees are NOT paid by the advertised deadline, a late charge is assessed. Also, be sure to let the Graduate School know if you make any changes (drop or add) in your schedule.

### **Term of Appointment**

Appointments are renewable each semester, contingent upon satisfactory academic progress toward a degree and satisfactory work performance. If your initial appointment covered two semesters, you will not receive another notification letter, and you do not need to do anything for your appointment to continue. If your initial appointment was for one semester, ask your PI if it will be continued. If not, and if you are interested in finding another appointment, speak to the Graduate School as soon as possible.

**Example Payroll Advice:**

Employee Name	Employee ID	Pay Period Start Date	Pay Period End Date	Payroll Id	
Public, John Q	1	07/01/2005	07/31/2005	1R01	
<b>Check Distribution</b>			<b>Check Issue Date</b>		
Any bank			07/31/2005		
<b>Gross Wages</b>	<b>Total Deductions and Taxes</b>	<b>Employee</b>	<b>Net Wages</b>		
2,990.00	772.38		2,217.62		
<b>Vacation Leave</b>		<b>Sick Leave</b>		Additional leave information is available under Employment, Leave Balances	
<b>Current Accrual</b>	<b>Balance</b>	<b>Current Accrual</b>	<b>Balance</b>		
10.00	74.00	14.67	151.37		
<b>Earnings</b>					
<b>Pay Description</b>	<b>Hours Worked</b>	<b>Gross Wages</b>	<b>Gross Year To Date</b>		
MONTHLY PAY	160.83	2,774.37	14,441.12		
APPROVED INCENTIVE PLANS	0.00	0.00	124.00		
HOLIDAY PAY	8.00	138.00	276.00		
VACATION PAY	0.00	0.00	155.25		
SICK PAY	4.50	77.63	77.63		
Totals:	173.33	2,990.00	15,074.00		
<b>Taxes</b>					
<b>Description</b>	<b>Employee Taxes</b>	<b>Employee Year To Date</b>	<b>Tax</b>	<b>Current Gross Wages</b>	<b>Year To Date Gross Wages</b>
SOCIAL SECURITY	180.02	907.82		2,903.66	14,642.30
MEDICARE	42.10	212.31		2,903.66	14,642.30
FEDERAL W/H	299.72	1,529.60		2,903.66	14,642.30
OKLAHOMA W/H	162.00	818.00		2,903.66	14,642.30
Total Employee Taxes:	683.84	3,467.73			
<b>Deductions</b>					
<b>Description</b>	<b>Employee Deductions</b>		<b>Employee Year To Date Deductions</b>		
V INS VP-R	14.62		73.10		
D INS HC-R	43.92		219.60		
FLEX MR-R	30.00		150.00		
Total Deductions:	88.54		442.70		
<b>Benefits</b>					
<b>Description</b>	<b>Employer Contributions</b>		<b>Employer Year To Date Contributions</b>		
H INS-HC	313.86		1,569.30		
LIFE INSUR	20.16		100.80		
TAXABLE INC (LIFE INS)	2.20		11.00		
ARP T-C	343.85		1,719.25		
OUT FEE	91.69		458.45		
SOCIAL SECURITY EMPLOYER	180.02		907.82		
MEDICARE EMPLOYER	42.10		212.31		
WC OFFICE	4.18		21.07		
UNEMPLOY	11.04		82.80		
Total Benefits:	1,009.10		5,082.80		

## **Oklahoma State University Policies**

### **Equal Opportunity / Affirmative Action**

It is the policy of the Oklahoma State University:

1.01 To be a complete equal opportunity University in all phases of operations, toward the end of attaining the University's basic mission and goals.

1.02 To provide equal employment and/or educational opportunity on the basis of merit and without discrimination because of age, race, ethnicity, color, sex, religion, national origin, sexual orientation, veterans' status, or qualified disability.

1.03 to subscribe to the fullest extent to the principle of the dignity of all persons and their labors; in support of this principle, sexual harassment is condemned in the recruitment, appointment, and advancement of employees and in the evaluation of students' academic performance.

1.04 to apply equal opportunity in the recruitment, hiring, placement, training, promotion, and termination of all employees; and to all personnel actions such as compensation, education, tuition assistance, and social and recreational programs. The University shall consistently and aggressively monitor these areas to ensure that any differences which may exist are the results of bona fide qualification factors other than age, race, ethnicity, color, sex, religion, national origin, sexual orientation, veterans' status, or qualified disability.

1.05 To ensure that each applicant who is offered employment at the University shall have been selected on the basis of qualification, merit, and professional ability.

1.06 to provide and to promote equal educational opportunity to students in all phases of the academic program and in all phases of the student life program; and shall consistently and aggressively monitor these areas to ensure that any differences which may exist are the results of bona fide factors other than age, race, ethnicity, color, sex, religion, national origin, sexual orientation, veterans' status, or qualified disability.

### **Student Disability Services**

*Student Disability Services at Oklahoma State University provides support services to students with documented disabilities.* Our goal is to provide assistance that will allow equal opportunity and equal access to education for each individual student. Academic support services include specialized testing, classroom accommodations, recorded textbooks, technological assistance, and other services as necessary. Students may ask for services by contacting Student Disability Services: <http://sds.okstate.edu/>

### **Oklahoma State University is a tobacco-free campus policy**

1.01 The Oklahoma Smoking in Public Places and Indoor Workplaces Act, 63 O.S. 2003, SS 1247; 1-1523; 1-1525, et.seq., requires Oklahoma State University to adopt policies regulating smoking in facilities owned, leased or under the control of the University. The Act prohibits the possession of lighted tobacco in any indoor place used by or open to the public, public transportation, or any indoor workplace, except where specifically allowed by law and allows educational facilities to adopt more restrictive policies regarding smoking and the use of other tobacco products in the buildings or on the ground of the facilities. These Policy and Procedures are adopted to implement that requirement.

<http://tobaccostopshere.okstate.edu/files/1-0530.pdf>

## **Policies and General Information Tuition, Fees and financial obligations**

### **Payment Deadline**

#### Introduction and General Statement

1.01 Enrollment at Oklahoma State University incurs certain obligations and commitments on the part of an individual student, one of which is the student's responsibility to pay all financial accounts owed to the University in a timely manner.

1.02 Further, the University has an obligation to make a reasonable endeavor to inform its students of how financial commitments can be fulfilled and to administer its collections process in a professional manner, using good judgment and reasonable compassion for its students.

1.03 Therefore, the following policy and procedure has been adopted to assist the students in understanding and meeting their financial obligations and to guide University officials in administering the collection of fees, tuition and other charges.

### **POLICY**

2.01 It is the policy of Oklahoma State University that in order to remain in good financial standing with the University and thereby continue to participate in its educational programs, services and benefits, all charges are due by the 15th of the month following the date of the charge unless a deferred payment arrangement has been implemented.

2.02 Accounts not cleared by their respective due dates are delinquent and shall be subject to the following action:

A. Delinquent accounts are subject to a late payment penalty at the rate of 1½% monthly on the unpaid balance.

B. All delinquent accounts shall result in a "hold" being placed on the student's academic record, thereby preventing pre-enrollment, subsequent re-enrollment, transcript release, or diploma release until the account has been cleared.

C. The passing of a check to the University which is not honored by the financial institution against which it is drawn may result in the cancellation of the student's enrollment for failure to pay a delinquent account.

### **PROCEDURE**

3.01 Immediately following the due date for the fall and spring semesters, the University Bursar shall make a reasonable endeavor to notify the student that the account is past due and a late payment penalty has been assessed. This may be in the form of a billing statement, letter, or electronic format.

3.02 A student who has a delinquent account may enroll for the subsequent semester and grades earned for the previous semester recorded if the delinquent account plus any penalties are cleared prior to the beginning of the next semester or reasonable arrangements have been made to settle the account in a timely manner.

3.03 To clear the account, the student must pay the delinquent account plus all penalties in full.

## *Appendix V*

### **General Information and Student Services**

#### **OSU Academic Services**

405-744-5333  
uas.okstate.edu

#### **Car Registration and Parking Accessible Parking Permits**

405-744-6523  
[www.parking.okstate.edu/09\\_parkinginformation.htm](http://www.parking.okstate.edu/09_parkinginformation.htm)

#### **Disability Support Services**

405-744-7116  
<http://sds.okstate.edu/>

#### **Books**

Student Union Bookstore  
405-744-5237  
[union.okstate.edu/Bookstore/index.htm](http://union.okstate.edu/Bookstore/index.htm)

#### **REGULAR BOOKSTORE OPERATING HOURS**

Monday - Tuesday      8 a.m. to 7 p.m.      Wednesday -Friday      8 a.m. to 5 p.m.  
Saturday      10 a.m. to 2 p.m.      Sunday      CLOSED

#### **OSU ID Services Office**

[www.it.okstate.edu/services/id/](http://www.it.okstate.edu/services/id/)  
E-mail: [id-svcs@okstate.edu](mailto:id-svcs@okstate.edu)

#### **University Health Services**

1202 W. Farm Rd.  
Stillwater, OK 74078  
Phone: 405- 744-7013

[www.okstate.edu/UHS/](http://www.okstate.edu/UHS/)

University Health Services is an outpatient ambulatory care facility designed to provide cost effective, physician directed health care and health information. The primary focus of the University Health Services is to provide primary health care with services including general medicine, gynecology, simple surgery and sport medicine. The University Health Services also provides students and visitors with information regarding current Health Issues via the "**Important Information and Links**" along with telephone numbers for inquiries about our services.

#### **Postal Services**

Need to mail a letter or pay a bill? You can buy stamps from the US Post Office located at the Student Union.

# Where Do I Find...

**OSU POLICE DEPARTMENT**  
1st Floor, USDA Bldg.  
(405) 744-6523  
<http://www.osupd.okstate.edu>

**REGISTRAR**  
(405) 744-6876  
<http://home.okstate.edu/registrar/>

**RESIDENTIAL LIFE**  
(405) 744-5592  
<http://www.reslife.okstate.edu>

**SCHOLARSHIPS AND FINANCIAL AID**  
(405) 744-6604  
<http://www.okstate.edu/finaid/>

**SERE'VEAN WELLNESS CENTER**  
1514 W. Hall of Fame Avenue  
(405) 744-9355  
<http://wellness.okstate.edu>

**STUDENT DISABILITY SERVICES**  
(405) 744-7116  
<http://www.okstate.edu/ucs/stdis/index.html>

**STUDENT GOVERNMENT ASSOCIATION**  
(405) 744-6500  
<http://www.osusga.com/>

**STUDENT UNION BOOKSTORE**  
(405) 744-5237  
<http://osunet.okstate.edu/bookstore/default.asp>

**UNIVERSITY ASSESSMENT AND TESTING CENTER**  
(405) 744-5958  
<http://uat.okstate.edu/index.html>

**UNIVERSITY COUNSELING SERVICES**  
001 North Cordell  
*Psychiatric Services—002 University Health Services Building*  
(405) 744-5472  
<http://okstate.edu/ucs/>

**UNIVERSITY HEALTH SERVICES**  
1202 West Farm Road  
(405) 744-7013  
<http://www.okstate.edu/UHS/>

**ACADEMIC & CAREER DEVELOPMENT CENTER**  
(405) 744-6434  
<http://www.okstate.edu/ucs/acdc.html>

**ADMISSIONS OFFICE**  
800-233-5019 ext 1 (in state)  
800-852-1255 (out-of-state)  
<http://admissions.okstate.edu>

**ALCOHOL & SUBSTANCE ABUSE CENTER**  
(405) 744-2818  
<http://www.okstate.edu/ucs/ASAC/index.html>

**ATHLETICS TICKET OFFICE**  
East Lobby, Athletics Center  
(405) 744-5745  
<http://okstate.com>

**BURSAR**  
(405) 744-5993  
<http://www.bursar.okstate.edu>

**CAMPUS LIFE**  
(405) 744-5488  
<http://union.okstate.edu/campuslife/>

**COLVIN CENTER/CAMPUS RECREATION**  
101 Colvin Center  
(405) 744-5510  
<http://campusrec.okstate.edu>

**INFORMATION TECHNOLOGY**  
113 Math Sciences  
(405) 744-4357  
<http://home.okstate.edu>

**PARKING OFFICE**  
1006 West Hall of Fame Avenue  
(405) 744-6525  
<http://www.parking.okstate.edu>

Information Technology at Oklahoma State University  
[www.it.okstate.edu/services/](http://www.it.okstate.edu/services/)  
Information Technology - Appropriate Computer Use Policy  
[www.it.okstate.edu/policies/pol\\_app.php](http://www.it.okstate.edu/policies/pol_app.php)



**Edmon Lowe Library**  
[www.library.okstate.edu/](http://www.library.okstate.edu/)

**Writing Center**  
Oklahoma State University  
Phone: 405-744-6671  
[writingcenter@okstate.edu](mailto:writingcenter@okstate.edu)  
[english.okstate.edu/writing/](http://english.okstate.edu/writing/)

**Colvin Center**  
<http://campusrec.okstate.edu/>

Exercise your body as well as your mind! No matter how busy you are with your studies, it is a sound investment of your time and energy to exercise, and you have already paid for it as part of your student fees. Rather than spending one more hour after countless hours of research or work on a project, take that hour and play racquetball, go for a swim, take an aerobics class, or lift weights. Some of the exercise machines can even be used in a racing mode, so invite your lab partner to come with you.

**Oklahoma State Directory**  
<https://app.it.okstate.edu/directory/>