The OSBP Handbook

Summary of Procedures and Requirements

Ohio State Biochemistry Program

THE OHIO STATE UNIVERSITY

2022-2023

Approved by the OSBP Graduate Studies Committee August 15, 2022

Table of Contents

Preface

The OSBP Handbook contains a summary of the rules, policies, and guidelines of the Ohio State Biochemistry Program (OSBP). The rules that govern students in a particular entering class year are determined by the version of the handbook that is in effect on the first day of the Autumn semester in the academic year in which the students begin the OSBP curriculum.

OSBP is governed by three documents: its Charter, the *Graduate School Handbook*, and *The OSBP Handbook* (formerly called *The OSBP Student Handbook*). The Graduate Studies Committee is charged by the Graduate School and the Charter to formulate and enforce the specific policies and rules for the program on behalf of the Graduate Faculty, encompassed within the policies and rules set forth by the Graduate School and the Charter. While no rule promulgated by the program may contradict rules of the Graduate School, some OSBP policies are more stringent than the basic policies of the Graduate School. Where no specific policy is stated in this handbook, the Graduate School rules apply.

Program Contacts

Charles Bell, Ph.D.
Director & Graduate Studies Committee Chair
Associate Professor
Dept. of Biological Chemistry & Pharmacology
614 688-3115 office
bell.489@osu.edu

Jane E. Jackman, Ph.D.
Associate Director
Professor
Dept. of Chemistry & Biochemistry
614 247-8097 office
jackman.14@osu.edu

Franci Brink
Program Manager
109 Biological Sciences Building
484 W. 12th Ave.
Columbus, OH 43210
614 292-1463 office
614 292-4466 fax
osbp@osu.edu

2022-2023 Graduate Studies Committee
Charles Bell, Chair
Jane Jackman (Assoc. Dir.)
Venkat Gopalan (Seminar chair)
Tom Magliery (at large)
Mark Parthun (at large)
Marcos Sotomayor (Recruitment chair)

I. Program of Study

The Ohio State Biochemistry Program (OSBP) is an interdisciplinary graduate program with participating faculty from colleges throughout The Ohio State University.

OSBP offers a course of study leading to a doctoral degree (Ph.D.). Biochemistry is a diverse field, and the program is flexible to accommodate that diversity. Students are expected to expend a significant effort on a research problem that culminates in a dissertation and at least one original first-author research publication. To this end, students take a core curriculum and approved biochemistry electives, advance to candidacy by writing a proposal and passing a general oral exam, conduct laboratory research, prepare and present a dissertation, and demonstrate that their thesis research adds significant new knowledge to a focused area of biochemistry.

By rules of the Graduate School, students who have advanced to doctoral candidacy may receive a master's degree with the approval of the Graduate Studies Committee (GSC) and subject to certain conditions (see Section VIII).

II. Admission

a. Application Procedures

OSBP only accepts students who intend to pursue a doctoral degree. In general, only applications for admission in the Autumn semester are accepted. With the approval of the GSC Chair, domestic students may elect to begin their studies in the Summer term before the Autumn semester of admission to conduct one of the three stipulated laboratory rotations (early start). All admission applications are due December 1. Students will be invited on a rolling basis to visit and interview, with most visits typically occurring in early to mid-February. Most applicants will receive their admission decisions between mid-February and mid-March. Graduate School fellowships and traineeships (training grant positions) are typically announced between late February and late March. Enrollment decisions are due by April 15.

Applications must be made online at the Graduate Admissions website. Applicants must upload a statement of intent, curriculum vitae/resume, and three letters of recommendation. The statement of intent should describe the applicant's interest in graduate studies in biochemistry and any undergraduate research experience. The statement should list reasons for interest in OSBP, as well as the specific areas of interest and some representative faculty whose research are of interest. Official transcripts from all institutions must be uploaded to the Graduate Admissions website.

The GRE general test and/or subject tests are not required for application or admission to OSBP. An applicant may submit scores from the GRE general test, or subject tests in Biochemistry, Chemistry or Biology to be considered in support of her/his application, if desired. If you choose to submit scores, these should be submitted directly by ETS using institutional code 1592 and department code 0000.

International students are required to take an English Proficiency Exam unless they are U.S. citizens or have obtained a 4-year bachelor's degree or higher from an institution in the U.S. [or an approved English-

speaking country: Australia, Belize, the British Caribbean or British West Indies, Canada (except Quebec), England, Guyana, Ireland, Liberia, New Zealand, Scotland, and Wales]. The Test of Spoken English (TSE) is not required. Applicants who do not submit a TSE score will have an opportunity to take the SPEAK test at Ohio State. The Ohio State University accepts scores from TOEFL, IELTS, and Duolingo. Official scores must be sent by the testing agency to the university directly. See the Graduate Admissions website for additional information about these exam requirements.

Students may not be directly admitted to a preceptor's laboratory. All students are required to conduct a minimum of three 7-week laboratory rotations with three different advisors before selecting a research advisor.

b. Entrance Requirements

Students must have successfully completed undergraduate coursework in chemistry (at least through organic chemistry, preferably with some physical chemistry), general biology, physics and mathematics (including some calculus). Nearly all OSBP students will have taken at least one semester of undergraduate biochemistry; biochemistry lab and coursework in molecular biology or molecular genetics are highly recommended. Most OSBP students are biochemistry or chemistry majors, but that is not a requirement. Previous research experience in biochemistry or a related area is highly desired.

Applicants must have earned a baccalaureate or professional degree from an accredited college or university by the date of entry. The Graduate School requires a minimum 3.0 GPA on a 4.0 scale in all previous undergraduate and graduate work. Students admitted to OSBP in recent years had a median GPA of about 3.6. For international students, OSBP requires a TOEFL score of 620 (paper) or 105 (IBT), and speaking scores of 26-30 are desired. The TSE is not required. The program admits approximately 35-40 students per year, for an average incoming class size of 15-20 students.

c. Transfer

Students may transfer from another Ohio State graduate program to OSBP by applying through the Graduate and Professional Admissions website and selecting the Intra-University transfer application. The GSC requires: (1) a letter from the student explaining the reasons for seeking the transfer; (2) a copy of the original application materials submitted to the Graduate School and the unit from which the student is transferring; (3) two current letters of reference; (4) a current curriculum vitae/resume; and (5) an advising report and any other relevant information on the student's performance in the original program. Transfer students must meet the same entrance requirements as other applicants.

Since transfer students are accepted to OSBP as first-year students, they are required to start in the Autumn semester with program financial support and are expected to carry out a minimum of three 7-week laboratory rotations before joining a laboratory. Students may not directly transfer into a preceptor's laboratory. (An early start date for the first laboratory rotation during the Summer term is possible with the permission of the GSC Chair.) Transfer students may request that prior coursework counts toward OSBP degree requirements, and that graduate credit earned at another university be transferred to this university. In general, core courses will be accepted with essentially identical course material, but electives will not.

Graduate credit transfer is subject to the rules in Section 4.2 of the *Graduate School Handbook*. In general, transfer students are expected to complete a master's degree in their initial graduate program before the transfer. Doctoral candidacy status does not generally transfer from any other program or institution. Exceptions to these rules will be considered by petition to the GSC, such as for students who move to Ohio State with a faculty member newly admitted to the OSBP Graduate Faculty. Note that by rule of the Graduate School a student with a master's degree in the same field from another university must transfer the degree to Ohio State, and all students with a master's degree must take at least 50 graduate credit hours beyond the master's degree.

d. Admissions Procedures

Complete applications to OSBP are reviewed by the standing Admissions committee. In general, domestic students will be recommended for admission only after an interview. An interview by phone or internet (e.g., Zoom) is required for international students. The admission of students to the Graduate School is the dual responsibility of the Graduate Studies Committee and the Graduate School. However, the Graduate School has the final authority for making admission decisions, and is also responsible for sending the official admission decision.

III. Financial Support

Students who are admitted to OSBP receive a commitment for full financial support for the entire time they are working towards their degree, provided they maintain a 3.0 GPA and make reasonable progress toward doctoral degree requirements. Full financial support includes a monthly stipend, full payment of tuition and fees, and 85% subsidy for health insurance.

In the first year, students are supported either through Graduate Research Associate (GRA) appointments provided by the program, through Graduate School fellowships (such as University Fellowships or Graduate Enrichment Fellowships), or through traineeships supported by NIH Training Grants. OSBP program support is guaranteed for one year, meaning three terms (typically, Autumn, Spring, and the following Summer semester). Students who elect to start a first laboratory rotation in the Summer term before their first Autumn semester will receive support for that early-start Summer, and the ensuing Autumn and Spring semesters. Summer-start students may only be appointed as a GRA or Fellow with the earliest start date of May 16 and will complete one 10-week rotation during the summer. Some students may be admitted with external fellowships or as self-supported students (such as if their employer is paying their tuition and fees), with terms to be set at the time of the offer of admission by the GSC.

Upon completion of the first-year support provided through OSBP ends, student financial support is the sole responsibility of the thesis advisor. Students may be supported as Graduate Research Associates (GRA), Graduate Teaching Associates (GTA), Trainees through the support of NIH Training Grants, or Fellows of the Graduate School, other University entities, or outside entities. The advisor commits to providing an equitable stipend, tuition and academic fees (along with required benefits), but the stipend level is at the discretion of the advisor in accord with the policies of the appointing unit (i.e., the advisor's home department). The Graduate School mandates a minimum stipend of $1,920 per month for GAs. OSBP encourages its faculty to support post-candidacy students at the life sciences IGP rate, which is $2,617 per

month in 2022-2023. Depending on their department and source of funds (GRA, GTA, or fellowship), some students may be paid at a lower rate consistent with the rate of the appointing unit. It is recommended that the advisor supplement such appointments from grants or other sources to close the gap in stipend.

The advisor must agree on the OSBP Preceptor Agreement Form that it is her or his sole responsibility to ensure continuous financial support after the first year of study (i.e., after program support ends). If the advisor no longer has sufficient grant resources or access to GTA appointments to support her/his OSBP student, it is the sole responsibility of the advisor, not the responsibility of the student or OSBP, to identify interim funding from the advisor's home department or another source so that the student is continuously supported, as long as the student in making reasonable progress towards the doctoral degree. OSBP does not have resources to provide support for students after the first year of study.

Students may expect continued support from their research advisor provided they meet the following criteria:

1. Except in cases of an approved leave of absence (see section F.4 of the Graduate School Handbook), students must be registered each term for at least the minimum number of credits required by the Graduate School for their status (see Section IV).
2. Students must remain in good academic standing, maintaining a GPA of at least 3.0.
3. Students must be making reasonable progress on their thesis research and on completing OSBP program requirements, as determined by the Graduate Studies Committee with the advice of the research advisor and Advisory Committee (see Section V).

Students who do not meet the above criteria may no longer be eligible for support, and their continued registration in the program may be at risk.

Students and advisors should be aware that in the event of student- or faculty-initiated separations (see Section VI.e), the student generally has until the end of the current term to find a new advisor, and that the current graduate appointment must be maintained until the initially agreed upon end date of the GRA/GTA appointment. In the event of faculty-initiated separations, terminations before the end of the appointment are possible only with the written approval of the Graduate School for specific reasons, such as performance of GRA/GTA duties unsatisfactory to the employing unit (see Section 9.2 of the *Graduate School Handbook*). OSBP considers it reasonable for the new advisor to assume responsibility for the appointment of the student at the time the student joins the new laboratory, when that is practical.

The appointment periods are August 16-December 31 for Autumn, January 1-May 15 for Spring, and May 16-August 15 for Summer.

OSBP Travel Grant Program

Subject to availability of funds, OSBP will provide up to one travel grant of up to $500 during the student's tenure in the program. Grants are offered on a competitive basis for conference travel, subject to eligibility rules and application timelines set by the program. Eligible expenses include registration fees, transportation, or lodging, all subject to OSU travel policy. To be eligible for award of a travel grant:

- Students must be post-candidacy and in good standing with the program.
- Students must be presenting a poster and/or talk at a national/international conference/meeting.
- Only one travel award will be given within a research group for any individual conference.
- Selections will depend on many criteria, including meeting program deadlines and performing acts of service to the program.

To apply for an OSBP travel award, students must submit an application to osbp@osu.edu that includes: an updated OSBP Activity Report, current Advising Report, and notification from the conference indicating whether the student's work has been submitted for an oral or a poster presentation. Information about deadlines for applications will be provided to all OSBP students at the beginning of each academic year.

IV. Registration and Scheduling

OSBP students are required to be continuously enrolled in all terms (Autumn, Spring and Summer semester) up to and including the term in which the student graduates. In exceptional circumstances, the GSC may (by petition) allow students not to enroll for a term due to illness or a serious family issue. The Graduate School requires that all post-candidacy students be registered in Autumn and Spring semesters (but see Section IX.c below for information on family and medical leave). Under no circumstances will a student be allowed to "volunteer" in a laboratory; any student working towards the degree must be enrolled in that term and appointed as outlined in Section III.

Before advancing to candidacy, students appointed as Graduate Associates (GRA, GTA or GAA) must enroll in a minimum of 8 credit hours per semester, and in a minimum of 4 credit hours in the Summer term. All pre-candidacy students appointed as Graduate Fellows must enroll in in a minimum of 12 credit hours per semester and in a minimum of 6 in the Summer term.

Pre-Candidacy Student Title	Minimum Credit Hours		
	Summer	Fall	Spring
Graduate Associate	4	8	8
Graduate Fellow	6	12	12

All post-candidacy students must enroll in in a minimum of 3 credit hours per term. The Graduate School only mandates enrollment in Autumn and Spring, but requires Summer enrollment if the student is actively working toward the degree on campus during the Summer term. OSBP requires enrollment in all terms, except by petition.

A minimum of 80 graduate credit hours beyond the baccalaureate degree is required to earn a doctoral degree (or 30 additional graduate credit hours beyond the master's degree). Pre-candidacy students should enroll in closer to the maximum number of credit hours each Autumn and Spring semester (18 credit hours) to ensure they will have sufficient credits by the time of graduation. There is no cost difference to the appointing unit between 8 and 18 credit hours during the Autumn and Spring semesters.

In general, students should only take classes that are part of the approved curriculum. First-year students

must obtain permission from the GSC Chair to take classes outside the normal curriculum; classes that are recreational or unrelated to biochemistry (such as physical education or a foreign language) will not be allowed. Such classes are discouraged after the first year but may be taken at the discretion of the student's thesis advisor. First-year students must also obtain the permission of the GSC Chair to enroll in more than 4 credit hours in the Summer term.

Students registering after published registration deadlines will incur substantial late registration penalties. Students registering after the published deadlines are assessed late fees and their registration may be canceled if tuition is not paid by the second Friday of the term. The student is responsible for payment of any late fees incurred. ***It is every student's responsibility to check the Graduate School and Registrar's web sites for the most current rules, regulations, and deadlines.***

V. Academic Standards

The *Graduate School Handbook* describes the academic standards for all graduate students (see Section 5). Students are expected to follow the Graduate School standards as well as the OSBP guidelines.

Students are considered to be making satisfactory or reasonable progress toward their degrees if they follow the curriculum and other program requirements on the prescribed timeline, unless alterations are approved by the Graduate Studies Committee, and maintain a GPA of at least 3.0 in graduate classes.

Attendance at seminars (OSBP 7890 MLS Seminar during the first and second year), required student seminars (OSBP 7600 and 7700), and required program events such as the annual IGP Symposium are important parts of satisfactory and reasonable progress. Receiving a total of two unsatisfactory (U) grades in any of these OSBP courses (7600, 7700 or 7890) is considered lack of reasonable progress, and will be reported to the Graduate School and a warning will be issued (*Graduate School Handbook* Section 5.4). Further unsatisfactory grades may result in denial of registration (*Graduate School Handbook* Section 5.5).

Satisfactory and reasonable progress toward doctoral research must be maintained, as evidenced by satisfactory grades (S) in graduate research courses and advisor comments on the Post-Candidacy Progress Report (see Section VI.e). Two unsatisfactory grades (U) in graduate research courses (OSBP 7193 or any 8999 or equivalent course) will lead to dismissal from OSBP. Any student who receives an unsatisfactory grade in a graduate research course will be required to appear before their Student Advisory Committee, GSC Chair, and/or the full GSC to discuss the reasons for the unsatisfactory progress. Unsatisfactory progress reported on the Post-Candidacy Progress Report will also result in a meeting with the GSC Chair and/or full GSC as well as possible warnings from the GSC and/or Graduate School, which could lead to dismissal from OSBP.

Students who do not: meet program deadlines for joining a lab, file annual activity reports, select a committee by the deadline, advance to candidacy at the end of their second year, meet with advisory committees and file annual post-candidacy progress (PCP) reports, or graduate within the five-year candidacy period will be considered to be failing to make reasonable progress toward the degree, which will trigger warnings from the GSC and/or the Graduate School, with possible denial of further registration. By rule of the Graduate School, students who do not raise their GPA above 3.0 after two consecutive terms

of probation, students who fail the candidacy exam twice, or students who fail the final oral exam twice are automatically dismissed from the University.

VI. Advising and Rotations

a. First-Year Advising

The GSC Chair acts as a temporary advisor for incoming students until they have completed the required laboratory rotations and selected their thesis research advisor, a choice that is typically made before the end of the second semester. Each first-year student should meet with the GSC Chair at least once throughout the academic year to discuss his or her progress. Students are required to take the core courses in the first year. Individual programs can be arranged for students with particular deficiencies in their previous coursework. Students who have completed a master's degree at an accredited U.S. university may be eligible to receive credit for some of the core courses based on a review of the courses by the GSC with the advice of the standing Curriculum Committee. While all students are expected to take the core courses, the elective courses are chosen by the student upon conferring with the advisor to correspond to the student's area of interest and specialization.

b. Laboratory Rotations

All students must participate in at least three 7-week laboratory rotations with three different OSBP faculty members before selecting a research advisor. Most students are expected to fulfill this requirement by completing rotations in Session 1 and Session 2 of Autumn semester and Session 1 of Spring Semester, and by joining a laboratory in mid-Spring. Students who select the early-start option to carry out their first rotation for 10 weeks in the Summer term before the first Autumn are expected to complete their second and third rotations in Session 1 and Session 2 of Autumn, and to join a laboratory before the beginning of Spring semester.

For each rotation, students are required to enroll in 3 credit hours of OSBP 7193 under the faculty member's name. OSBP 7193 is graded Satisfactory/Unsatisfactory based on fulfillment of the expectations set out in the rotation contract. The student should meet with the rotation advisor before or during the first week of the rotation to complete the rotation contract, and provide a copy or scan of the rotation contract to the OSBP office (osbp@osu.edu) by the second Friday of the rotation period. At the end of the rotation, the form is completed by the student and signed with comments by the potential advisor at an exit meeting. A copy or scan of the fully completed rotation form must be turned in to the OSBP office (osbp@osu.edu) by Friday of the last week of the rotation period. The rotation contract form is available on the OSBP website (see the Handbook, Forms, and Deadlines page).

Students who do not match to an advisor after three rotations may complete a fourth rotation, but must first meet with the GSC Chair to obtain consent. Further rotations are possible with the permission of the GSC Chair, but the student must have a permanent research advisor by the end of the program support period (for most students, the end of the first Summer term; for early-start students, the end of the first Spring semester). Students who fail to match to an advisor after four rotations will receive a warning from the Graduate School about lack of reasonable progress. Students who fail to match to a laboratory by the end

of the first year are not making reasonable progress and will be barred from enrollment in the following term. OSBP financial support is **not** available after the first year.

OSBP students may only rotate in the laboratory of an OSBP faculty member. Faculty are not eligible to take rotation students on a provisional basis while their application for OSBP membership is under consideration; they must wait until final approval from the Graduate School is received confirming their status (see Section XIV).

Certain NIH Training Programs allow students to rotate with faculty from multiple graduate programs. OSBP students in these training programs may only do so with the permission of the GSC Chair, and only for the third rotation if the student is confident that she or he has found a matching advisor among the OSBP faculty in the first two rotations. Note that some training programs have similar rules. For example, CMBP requires that at least two rotations be with CMBP faculty members. It is the trainee's responsibility to ensure that his or her rotations comply with the rules of their fellowship.

c. Joining a Research Laboratory

Students are encouraged to join a laboratory as soon as possible after completion of the third rotation. Students who start in the Autumn should complete their advisor selection within 2 weeks after the end of Spring Session 1, or, if no match is possible, meet with the GSC Chair and initiate a fourth rotation by that same date. Early-start students should complete advisor selection by the end of the Autumn final exam period, or, if no match is possible, meet with the GSC Chair and select a fourth rotation to begin the first day of the Spring term.

A student formally selects a research advisor when the Preceptor Agreement Form is signed by the advisor and the advisor's department chair (or designee) and approved by the GSC. This Preceptor Agreement Form is a Memorandum of Understanding (MOU) by all signatories agreeing to the responsibilities of the advisor: to supervise the conduct of research and preparation of the dissertation, to assure that the student adheres to program requirements, to administer the candidacy and final exams in accordance with program rules, and to accept full responsibility for ensuring financial support to the student through graduation provided the student is in good academic standing and making reasonable progress toward the degree. The Preceptor Agreement Form must be filled out and signed electronically; see the Handbook, Forms, and Deadlines page of the OSBP web site for details.

If there are no concerns about the student-advisor match and the advisor's department chair approves the form, the GSC Chair will typically approve the form on behalf of the GSC. If the advisor's department chair will not approve the form, the GSC will also not approve it, and the student must find a different advisor. The GSC may also independently refuse to approve the form if there are serious concerns that the student will not be successful with the selected advisor. Serious concerns about the selected advisor might include, but are not limited to, inability to ensure the financial support of the student, a large number of students joining the same laboratory in a given year, a track record of students who previously failed to meet program deadlines or other requirements, or a history of students who have repeatedly left the laboratory without completing a degree.

OSBP students must select an OSBP faculty member as preceptor. OSBP does not recognize co-advisor relationships for its students. Even if the student carries out experiments in a collaborator's laboratory or is financially supported using the resources of a collaborator, the preceptor accepts full responsibility for academic advising, supervising research and preparation of the dissertation, ensuring adherence to program policies, administering the candidacy and final exams, signing the exam forms, dissertation and final approval as the advisor, and supporting the student financially.

d. Advisor Selection – Best Practices

Some of the most important factors in selecting an advisor are the project the student will work on, the ability of the student and advisor to work together, the advisor's funding situation, and the affinity of the student for the particular laboratory environment. Students can be successful laboratories that have few or several trainees and with advisors with very different philosophies on the degree of independence afforded to trainees. But individual students will probably thrive in only a subset of the possibilities. During the three rotations, students should consider exploring laboratories that are operated quite differently. Rotations also provide opportunities for the student to refine his or her interests and to explore topics that best resonate with her/his interests. However, students who rotate in laboratories that work on three vastly different themes may have a difficult time matching, probably in part because there is no meaningful basis for comparison among the choices. A targeted search for rotation laboratories is usually most effective.

What should happen during the rotation? The best answer to this question is to talk in detail with the potential advisor and make sure that expectations match up. If the lab typically starts work early in the morning, plan to start work early in the morning. If that is not something you are willing to do, you are probably rotating in a laboratory that might be unsuited for you. Expectations for things such as the number or timing of working hours in the laboratory are set by individual faculty for their own laboratories, and you should make sure that you discuss these expectations with any potential OSBP mentor and consider these factors in your decision-making. The structure of laboratories is variable. Some advisors will just have rotators read papers, attend group meetings, and observe or work with another student or postdoc; others will have an actual small independent project for the student to complete. Agreeing on what is reasonable is the motivation for filling out the top of the rotation contract early. In any event, it is typical for some combination of reading literature, experimental work, attending research meetings, and giving presentations. Spending at least 20 hours per week in the laboratory during rotations would be quite common. Expectations for some work/study time early, late or over the weekend are not unusual.

Typically, 80+% of students match to a laboratory at the end of three rotations, and nearly all match to a lab after four rotations. Students should be aware that most students join a laboratory in mid-Spring, and many faculty members may not have additional funding or space to commit to additional students after that time. Advisor selection is an important decision in the career of the graduate student, and it should not be rushed. On the other hand, while most students who do not find an advisor in three rotations are still successful, students must also accept the practical reality that it gets harder to find an advisor after three rotations.

The student-advisor matching process works best if all the necessary facts are out in the open and there is candid communication. Students who are not interested in joining a laboratory after a rotation should say

so to free up the advisor to consider additional students; conversely, if you are confident that you want to join the first laboratory you rotate in, you should express this interest. Similarly, faculty should be up front about the number of students they intend to take, how many other students are interested in her/his laboratory, the amount of funding available, and how the student will be funded over the course of her/his graduate career. Faculty should not host laboratory rotations if they are not certain that they will have funding available at the time of the rotation. Students should inquire about these issues if the advisor does not volunteer the information.

Faculty should be realistic about their ability to support their students both academically and financially. Taking more than 2 or 3 first year students in a year is likely to be risky for all but a few laboratories that have the funding and infrastructure to support many trainees. OSBP is a large program with many more faculty interested in taking students than the program can bring in; when in doubt, it is more helpful not to take a risk with the student's advising and future support.

e. Student-Advisor Separations

The vast majority of students complete a degree with the advisor they select first. Inevitably, some student-advisor relationships encounter problems that cannot be easily resolved.

Student-Initiated Separation

If a student wishes to terminate the relationship with his or her advisor, the student must request a meeting with the GSC Chair, or if this represents a conflict of interest, another member of the Graduate Studies Committee. This meeting will be held in confidence. If the student so desires, the GSC Chair (or another member of the Graduate Studies Committee) will attempt to arbitrate differences between the student and the advisor, and may involve the Student Advisory Committee. If the student does not wish to confront the advisor, s/he will be allowed to leave the advisor with no stated reason. However, all research materials, complete copies of notebooks, and any supplies provided by the advisor must remain with the advisor.

The student must transfer to a new advisor (who is a member of the OSBP faculty) during the same academic term as the separation. The program bears **no** responsibility for financial support of the student during the separation. The GRA/GTA appointment of the student must be maintained through the end of the term. However, it is reasonable for the support of the student to transfer to the new advisor before the end of the term when that is practical. If a student does not identify a new advisor affiliated with the program within the academic term of the separation, the student must leave the program. OSBP does **not** have guaranteed funds to support students who have separated from their preceptor.

Advisor-Initiated Separation

If an advisor wishes to terminate the relationship with a student (resign as the preceptor), he or she must follow the rules of the Graduate School and the rules of the program. OSBP requires that the advisor must document dissatisfaction with a student's performance or progress in a written letter to the student, with a copy sent to the GSC Chair. If unsatisfactory progress in research is an issue, this must be documented by a U grade in the advisor's graduate research course under which the student is registered. A meeting of the

student's Advisory Committee should be held to allow the student the opportunity to present his or her progress, and the student must meet with the GSC Chair or the full GSC as deemed necessary. If the advisor has documented her or his dissatisfaction with the student as above and no resolution can be found, the advisor may resign as the student's preceptor in writing to the student and the GSC Chair.

In general, the student's appointment must be maintained to the end of whichever term the separation was initiated. Graduate School rules state that GA appointments may not be terminated prior to the end of the appointment period without written approval from the Graduate School, and only for a limited number of reasons (see Section III and *Graduate School Handbook* Section 9.2). The appointment period is determined by the contract signed between student and advisor kept with the hiring department and may be set for a specific academic term or annually, as defined by their appointment letter. Terminations at the end of the appointment period do **not** require permission of the Graduate School.

When the advisor resigns as the student's preceptor, the GSC will determine whether the student will be allowed to identify a new advisor, or whether further enrollment will be barred after the end of the term. Students who receive two U grades in graduate research courses will be dismissed from the program (see Section V). If the student is allowed to seek a new advisor, they must either expediently identify an OSBP faculty member as preceptor by the end of the term in which the previous advisor resigned or leave the program. OSBP does **not** have guaranteed funds to support students who have separated from their preceptor.

f. Student Advisory Committee

In the Summer term at the end of the first year, after the advisor assignments are finalized, students consult with their new advisors to select a Student Advisory committee. The purpose of the advisory committee is to assist in advising the student of appropriate elective courses to take in order to complete the doctoral program, to provide advice on scholarly matters throughout the student's tenure at the university, and to review the annual progress of the student. Students should meet with their Advisory Committee at least once a calendar year for this purpose. The Student Advisory Committee also serves as the Candidacy Examination Committee, the Dissertation Committee, and the Final Oral Exam Committee. *Note that although the Graduate School requires only the advisor and two Graduate Faculty members for the Dissertation Committee and Final Oral Exam Committee, the program requires the entire Student Advisory Committee, except by petition to the GSC.*

The advisory committee consists of the student's advisor and three additional faculty members. At least two of the additional members must be members of the OSBP faculty, and all three must be P status members of the Graduate Faculty of the University. Students may optionally appoint a fifth member to the advisory committee who is not required to be a member of the Graduate Faculty, but permission of the GSC and the Graduate School is required to appoint a Non-Graduate Faculty member (see the Committee and Examination Petition on the gradforms.osu.edu website).

Students submit their choices in writing to the GSC Chair (through osbp@osu.edu) for review by June 30 at the end of their first year. The student or advisor must ask potential members to serve on the committee before submitting their choices to the program. The GSC may request changes to the committee, but in

most instances will provide confirmation of the committee choices to the student and advisor. The Committee Selection form is filled out and signed electronically as directed on the OSBP website (see the Handbook, Forms, and Deadlines page), and is typically approved by the GSC Chair on behalf of the GSC unless there are concerns about the committee assignments. The student will make the Graduate School aware of his or her committee members when the student schedules the candidacy and final exam. The Application for Candidacy Exam and Final Exam must be filled out and approved electronically through the gradforms.osu.edu website.

g. Post-Candidacy Progress Report

Students who have completed their candidacy exam are required to meet with their Advisory Committee at least once each calendar year. In addition to appraising the committee of progress, the student and the advisor should use these meetings to ensure completion and submission of the Post-Candidacy Progress Report to osbp@osu.edu. These meetings should generally occur in the Summer or Autumn term and the report is due by December 31 of each post-candidacy year. No report is required immediately after advancing to candidacy; the candidacy exam serves as the advisory committee meeting in the second year. Advisory Committee meetings should explicitly address a schedule for publication of first author papers and graduation, as well as career goals and actions that can be taken to further those goals. If the report indicates that unsatisfactory or unreasonable progress is being made towards timely degree completion upon review of the report by the GSC Chair or if a student receives unsatisfactory grades in her or his graduate research course, then action will be taken as outlined in Section V on Academic Standards. A Microsoft Word .doc format version of the report form is available on the OSBP website.

VII. Doctoral Degree

a. Curriculum

In the first and second years, the doctoral curriculum consists of core courses, elective courses, laboratory rotations, first year student orientation, student seminars, and colloquium.

In the Fall semester of the first year, all OSBP students must enroll in two **core courses,** one in molecular biology (6701, 3 credit hours) and one in protein and nucleic acid structure and function (6761, 3 credit hours). Students may not drop either of these courses without the permission of the GSC Chair. Students who are allowed to drop either or both of the core courses must successfully complete them in the second year to qualify for candidacy.

A minimum of **9 credit hours of approved graduate biochemistry electives** is required. Typically, these are at the 6000-level or above, and must be graded A-E (S/U courses will not be approved). Only 3 credit hours may come from laboratory-based courses. At least 1.5 credit hours must be taken in an approved "Quantitative Biology" course. Approved courses that satisfy this requirement are listed in Appendix B. All elective courses should generally be completed by the end of the second year. Students may choose from the list of OSBP-approved electives provided in Appendix B, which is also updated frequently on the OSBP website. To facilitate choice electives based on research areas, four elective “tracks” have been created: Chemical Biology and Enzymes, RNA Biology, Structural Biology and Biophysics, Molecular

Bases of Disease. Students are encouraged, but not required, to consider these tracks when choosing their electives.

Students wishing to count courses not on the approved list towards their required biochemistry elective credit requirement must submit a justification to the GSC chair that includes the course description (syllabus) and an explanation from both the student and advisor as to why the course is desired. Students are advised to also consult the members of the Advisory Committee for elective course selection. Students are allowed and encouraged to take additional electives outside the field of biochemistry that will contribute to their understanding of their research (such as mathematics), but these will not be approved for the required biochemistry elective credits.

First year students must enroll in **First Year Student Orientation** (OSBP 7600, 1 credit hour), which is offered in the Autumn semester and graded on an S/U basis. This is a special mentoring seminar course given by the faculty of OSBP and partner graduate programs.

First and second year students must enroll in **Student Seminar** (OSBP 7700/OSBP 7700.01, 1 credit hour) in the Autumn and Spring semesters. Guidance on which student seminar course (OSBP 7700, graded A-E, or OSBP 7700.01, graded S/U) the student should enroll in will be communicated by the GSC Chair and/or Program Coordinator prior to the beginning of each semester.

First- and second-year students must enroll in OSBP 7890, 1 credit hour (**Colloquium-Advanced Biochemistry Topics**) during each Fall and Spring semester. This course is associated with the Molecular Life Sciences (MLS) external seminar series that is jointly sponsored by OSBP and MCDB. After the second year, students are encouraged to consult with their advisor to determine whether enrollment in any additional external seminar series (such as CHEM 8892) is helpful for their research goals, or whether attendance at individual seminars that are part of MLS seminar series is more appropriate. Regardless of whether formal enrollment or more individualized seminars are chosen, actively participating in external seminars is a critical part of scientific development for all OSBP students. As a guideline for students and faculty, OSBP expects that all students will seek to attend approximately one external seminar per week during each semester.

In the Fall semester, first year students will enroll in a full semester of OSBP 7193 with the director as the instructor to serve as the temporary PI for the student and 2 session courses of OSBP 7193 for each required laboratory rotation. In Spring, they will enroll in 3 session courses of OSBP 7193; one course with the director to serve as the temporary PI in the first session, one course for the 3rd rotation in the first session, and one course with the chosen permanent PI in the second session in place of an 8999 research course (See Section VI.b). First year students can adjust the number of credit hours (usually 3-6) of OSBP 7193 courses to bring the total course load to 18 credit hours in the Autumn and Spring semesters. The credits enrolled under the Director's purview are awarded for progress toward first-year program requirements.

A minimum of **80 graduate credit hours** (or 50 credit hours beyond the master's degree) is required to graduate with a Ph.D. See Section IV for registration guidelines by student status.

All decisions on special curricular requests are ultimately the responsibility of the GSC, with the advice of

the standing Curriculum Committee.

b. Public Seminar and Symposium Requirement

Students are required to give a public oral research presentation during their third or fourth year in the program. This requirement can be satisfied by presentation in multiple different venues as long as the talk is open to a broad audience (such as in a departmental seminar series, at the Life Sciences IGP symposium, or at a large scientific meeting). Presentations at group meetings are **not** acceptable to fulfill this requirement. A limited number of slots for OSBP presentations may be available through the Department of Chemistry and Biochemistry's biochemistry division seminar (CHEM 8892). Students who are interested in presenting in this course to fulfill the requirement should contact the OSBP Director.

All students must register for and attend the annual Life Sciences IGP Symposium each year. The symposium is typically during the third week of May. Students in the fourth year and beyond must submit an abstract and present a poster or oral presentation.

c. Qualifying Policy

After completing the core courses, each student's record is evaluated by the GSC Chair. Students are normally expected to complete at least 9 of the required 15 credit hours by the end of Spring Semester of the first year, and all 15 credit hours must be in progress or complete to advance to candidacy (i.e., before the oral candidacy exam occurs), unless they have previously obtained permission from the GSC Chair to defer one or more courses that are not offered until after candidacy is completed. In order to remain in good standing and to be eligible to take the Candidacy Examination, students must have a cumulative GPA of at least 3.0 in all graduate courses (i.e., the student cannot be on academic probation when they advance to candidacy). Students who have not completed the core courses or students who do not have a 3.0 GPA will **not** be allowed to take the Candidacy Examination.

d. Candidacy Examination

All OSBP students must advance to candidacy by the end of the second year (i.e., no later than the last day of Summer term their second year). The Student Advisory Committee serves as the Candidacy Exam Committee, and the Advisor serves as the chair of this committee. The exam consists of both written and oral portions, and the written exam must be evaluated before the oral exam; however, the final assessment of candidacy is determined based on both portions together.

Written Portion

The written portion of the exam is a research proposal focusing on the student's proposed dissertation topic. The proposal should be in the general format of a predoctoral fellowship application, such as an NIH F31 fellowship and it should be 10 pages of 11 point Arial text (including figures but exclusive of specific aims page and references).[1] The proposal should include three specific aims, and at least one of these aims must

[1]The GSC intends that students will be able to edit this document to submit to predoctoral fellowship applications, when allowed, but evaluation of the student for candidacy is the most important purpose of the document.

be a novel and creative aim (the "independent aim") developed by the student. This aim should not be part of any of the advisor's grant proposals or an idea that is being pursued by the advisor. To be clear, the entire proposal must be the independent work of the student written in his or her own words; the independent aim must be a completely independent idea of the student. The specific aims page should be submitted to the exam committee for their approval, and the advisor should provide assurance to the rest of the committee that one of the aims is completely independent. The committee will evaluate the aims document within one week. If the aims are deemed unacceptable, the student will return revised aims to the committee within one week after receiving the initial feedback. It is important for the student to provide a point-by-point response on how the committee's critique was addressed.

The student should submit the complete proposal and evaluation form to the committee within four weeks from the date the aims are approved. Each committee member will provide an assessment and comments on the proposal within two weeks from the student's date of submission using the OSBP Candidacy Written Exam Evaluation Form found on the OSBP website. Completed forms will be sent ***directly to the advisor, who will communicate the consensus evaluation of the committee (including all comments) to the student and the rest of the committee***. The committee will choose one of these options when evaluating the written proposal: (1) Major Rewrite; (2) Revise: minor changes are required to the document; or (3) Approved as submitted. This process is repeated for each required revision until the document is approved.

The advisor is the chair of the exam committee and is responsible for coordination and communication of **all** decisions regarding the candidacy document to the rest of the committee and the student. All communication, from either the student or committee members, should be copied to the advisor.

Each committee member should submit his or her review of the full proposal using the required Candidacy Written Evaluation Form to the chair (advisor) with the recommendation (major rewrite, revise, approve), **and the chair should communicate a single decision along with all comments to the student - this decision should be communicated in an email to the student with all committee members copied**. It is acceptable for each committee member to send her or his individual comments to the student and cc the entire committee, or just to the student (and advisor).

Candidacy timeline with expected review periods:

- Aims submitted to committee: **one week** for committee evaluation
- If revisions to Aims page are requested: **one week** for student revision
- Revised Aims submitted to committee: **one week** for committee evaluation (additional cycles of revision with the same timeline are permitted, although advisors are encouraged to contact the GSC Chair if approval of the Aims page becomes a protracted process).
- Once Aims are approved: **four weeks** to complete full written document
- Written document submitted to committee: **two weeks** for committee evaluation (each committee member should respond to advisor with written comments, and advisor will provide summary of committee's consensus response to the student and full committee).
- If revisions are required, OSBP encourages a faster timeline (of student revision and committee evaluation) when possible, to maintain student progress toward advancing to candidacy.

It is left to the discretion of the committee how many revisions will be allowed, but the advisor should

consult with the GSC by contacting the GSC Chair if more than one Major Rewrite is required. According to the *Graduate School Handbook* Section 7.4:

> If, based on evaluating the written portion, the advisor or another member of the candidacy examination committee see no possibility for a satisfactory overall performance on the candidacy examination, the student may be advised to waive the right to take the oral portion. The candidacy examination committee may not, however, deny a student the opportunity to take the oral portion.
>
> If the student decides to waive the right to take the oral portion, a written statement requesting the waiver must be presented to the candidacy examination committee. In such a case, the candidacy examination committee records an "unsatisfactory" on the Report on Candidacy Examination form and submits a copy of the student's waiver request to the Graduate School.

See section e. Candidacy Exam – Best Practices, for additional information about the written portion of the exam.

Oral Portion

When the committee approves the final version of the written proposal, the student may then formally schedule the Oral Examination through the graduate school gradforms.osu.edu. It is permissible to reserve a tentative date for the exam with the committee before the final written approval is obtained, with the understanding that the date may need to be rescheduled if the required approval is not obtained from the committee prior to the two-week deadline mandated by the Graduate School (see below). The Application for Candidacy form must be filled out and submitted by the student and approved electronically by the advisor and GSC Chair through gradforms.osu.edu. The form must be filed at least two weeks before the exam—*the Graduate School makes no exceptions to this rule.* The oral portion normally must be taken within one month of approval of the written portion, and it must occur during normal University business hours, Monday through Friday, and exclusive of University holidays.

According to the Graduate School Handbook Sections 7.3 and 7.5, "The purpose of the candidacy examination is to test a student's comprehension of the field, allied areas of study, capacity to undertake independent research, and ability to think and express ideas clearly. The oral portion of the candidacy exam lasts no more than two hours. Questioning of the student should occupy the entire period of the examination." The oral exam is a general exam that should focus on the topic of the proposal and the larger field of biochemistry. The committee will ask the student to explain the proposal and pose questions throughout the two-hour exam. The entire committee must be present for the entire exam.

The Report on Candidacy must be filed through gradforms.osu.edu. It is important that all committee members are present for the discussion of the exam results (with the student excused from the room). The decision of the committee, which is based on both the written and oral portions together, should be communicated to the student in person after this discussion, and each committee member must enter their decision online within 24 hours. The decision of the committee must be unanimous for approval for the overall decision to be Satisfactory. The *Graduate School Handbook* establishes policy for what happens if the overall result is Unsatisfactory (see Section 7.7). The Graduate School will appoint an outside Graduate

Faculty Representative for the exam if a second attempt at completing the oral exam is required.

Candidacy Rubric

Completion of the OSBP Candidacy Rubric is a requirement for all OSBP students completing candidacy and the results will be used for program assessment. The Rubric forms are available on the OSBP webpage and students should bring printed copies for each candidacy committee member to the oral exam. Each member of the candidacy examination committee must complete the assessment page, which will be collected by the student immediately after the exam. Students are responsible for submitting the signed pages to the OSBP office (either hard copy in person or scanned copy to osbp@osu.edu) by 5 PM the day after completion of the candidacy exam.

The information collected on the candidacy rubrics is **not** used to evaluate the results of any specific exam, but will be aggregated for all students in the program to enable assessment of how well the program as a whole is achieving student learning outcomes. OSBP expects most students to achieve at least medium performance in the majority of categories listed on the candidacy rubric, but it remains solely up to the committee's discretion to decide the result of an individual student's exam. Committee members are nevertheless strongly encouraged to incorporate their evaluations into post-exam discussions with the students to help them identify areas of strengths and weaknesses for their own improvement.

e. Candidacy Exam – Best Practices

It is strongly suggested that second-year students submit the aims page to the committee in the Autumn semester and obtain approval by the end of the calendar year. Faculty often travel during semester breaks and summer term. Initiating the process on time is the best way for students to proactively avoid any scheduling delays that could interfere with timely completion.

Students should review Appendix C, which contains proposal writing information from the NIH web site. It is common, but not required, for one aim to describe work in progress, one aim to describe a related project or a significant extension that will round out the dissertation, and an independent aim to be related to the project, but to represent a significant expansion outside of the work of the preceptor's laboratory. For example, a student in a structural biology laboratory might consider proposing a cell-based or animal model. While the independent aim must be scientifically sound, it is not expected that the student will necessarily complete this aim during her/his PhD.

Review of the specific aims page is meant to critique the scope of the work before the student undertakes writing the proposal. An aims page should not be rejected based on the need for text editing. It is appropriate to identify issues that need to be addressed in the full proposal at this time. Students should obtain comments from all committee members and produce a single unified revision of the revised aims, as needed.

As part of the revisions sought by the committee, the student should not simply strive to incorporate a few edits in response to individual comments from each committee member. The process should be coordinated by the chair, and the committee should speak in one voice about each revision. It is encouraged, but not required, for the student to discuss in person critiques with each committee member to ensure that there is

no ambiguity on the committee member's comments and expectations. This examination is designed to determine which students are capable of writing and defending a Ph.D. dissertation. On the other hand, advancement to candidacy is determined by the totality of the written and oral portions of the exam; an approvable proposal is not necessarily flawless and may contain issues to be addressed as questions in the oral portion of the exam.

It is strongly suggested that second-year student students have the written portion of the exam approved no later than the end of Spring semester.

It is permissible, when practical, for the chair to put a tentative date on the calendar for the oral exam at any time during the process. The Application for Candidacy form on www.gradforms.osu.edu **cannot** be filed until the committee approves the written portion of the exam and it must be submitted 2 weeks prior to the scheduled oral exam. It is therefore important for the student and advisor to consider a realistic timeline for the writing, evaluation, and editing process and to avoid any appearance of influencing the exam results to meet a pre-determined timeline.

The oral exam cannot include an uninterrupted presentation of the proposal; the entire period must consist of questions from the committee. Consequently, while handouts or PowerPoint-type slides are permitted, they should be limited to approximately five (5) slides and used throughout the exam, not as a presentation at the beginning of the exam period.

Committee members should either enter the results at the exam on a laptop or mobile device in the exam room immediately after the discussion, or return to their offices and post the results as soon as possible.

It is highly recommended that the oral exam is completed by the end of May of the second year. Due to faculty travel, it becomes very difficult to schedule oral exams in the summer.

f. Post-Candidacy

After advancing to candidacy, students will continue working on their original research projects, which will be the basis of the dissertation.

OSBP requires continuous enrollment and appointment of its students in all terms. Post-candidacy students should enroll in 3 credit hours per term. Post-candidacy students should generally enroll mostly in 8999 or equivalent research courses and may enroll in 1-credit hour of a seminar course each Autumn and Spring semester. Third- or fourth-year students must present a public oral research presentation (see Section VII.b). Post-candidacy students must continue to attend the IGP Symposium each year, and students in the fourth year and beyond must present a poster or oral presentation. It is typical for post-candidacy students to attend workshops and conferences, present posters and oral presentations at regional and national meetings, publish papers, and begin drafting the dissertation. OSBP students must publish at least one original first-author research paper to graduate (see Section VII.h).

Post-candidacy students must meet with their Advisory Committees at least once a calendar year (starting the year after advancement to candidacy), typically in the Summer or Autumn term, and turn in a Post-

Candidacy Progress Report to the OSBP office by December 31 of each year (see Section VI.g). The report should be turned in within a week of holding the committee meeting. These meetings should include an explicit discussion of the timeline for graduation, including specific recommendations concerning the completion of the dissertation and first author paper requirement. The reports should also include an explicit discussion of the student's career goals and action items that will be pursued to further those goals.

Students must graduate within five years of advancement to candidacy, or the student's candidacy will be canceled. Procedures for re-admission are specified in the *Graduate School Handbook* Section 7.7. In general, the OSBP GSC will not allow re-admission to candidacy. In the rare case that a supplemental candidacy exam is approved, the advisor must consult with GSC on the nature of the exam, and the GSC has final authority in determining its format. Students re-admitted to candidacy must graduate within two years, but the GSC may (and likely will) limit the second candidacy period to a shorter term.

The average time to graduation from OSBP over the preceding five years was 5.7 years in 2022. Average time to graduation has decreased from historical averages, likely a result of the earlier (second year) candidacy mandate starting in 2012, which consequently requires all students to graduate by the end of the seventh year to avoid cancellation of candidacy. The GSC believes that the significant majority of students should be able to graduate in 5-6 years.

g. Dissertation and Final Oral Exam

When the student and advisor, in consultation with the Student Advisory Committee, feel the dissertation will likely be ready to defend within a given term, and all other requirements have been met, the student must file the **Application to Graduate**, which is filled out and approved through gradforms.osu.edu. The Dissertation Committee is the Student Advisory Committee. (Note that OSBP requires the full Advisory Committee for the final oral exam, even though the Graduate School only requires the advisor and two other Graduate Faculty members.) **This form must be filed by the Graduate School deadline of the third Friday of the term**. On the form, the student must indicate if they plan to defend and file the dissertation by the "regular" deadline, which results in conferral in the same term, or by the end-of-semester (EOS) deadline, which results in conferral in the next term. It is recommended by OSBP to initially file for the regular deadline, and then inform the Graduate School of the delay if the regular deadline is not met. Once an Application to Graduate is filed, you can always switch to the EOS deadline if needed, but not from EOS back to the regular deadline. If the student initially indicates he or she will graduate by the regular deadline, but ends up needing more time, email the Graduate School Graduation Services at Grad-SchoolGraduationServices@osu.edu to notify them that you would like to change to the EOS deadline. If a student ends up not being able to graduate by the EOS deadline of that term, they can always file the application again in the next term (there is no penalty), provided they are still within five years of passing the candidacy exam.

OSBP also requires that the OSBP Ready-to-Graduate Checklist be completed, signed by the student and advisor, and turned in to the OSBP office at least 48 hours before the Graduate School's Application to Graduate deadline. This application is needed to provide OSBP with the necessary information to approve your application. The Ready-to-Graduate Checklist can be found on the OSBP web site on the "Handbook, Forms, and Deadlines" page. Note that copies of the student's advising report and original first-author

publications must be included with the Checklist. This checklist must be completed every semester that a student petitions to graduate.

When a complete draft of the dissertation is ready, it must be provided to the Dissertation Committee, who will judge whether the thesis is of sufficient merit to warrant holding the final oral exam. Students are responsible for ensuring that committee members have sufficient time to evaluate the draft dissertation. The draft document should be provided to the committee to allow no less than one week for this evaluation, but possibly more, depending on committee members' availability. Once the draft is approved by the committee, the student must file the **Application for Final Exam** through gradforms.osu.edu. This form must be approved by all the committee members no later than two weeks before the scheduled date of the Final Oral Exam—*the Graduate School will not make any exceptions to this rule*. The student must also bring a copy of the approved complete draft to the Graduate School for format pre-approval no later than two weeks before the Final Oral Exam date. Note that formatting guidelines and template files are available at the Graduate School website; follow these guidelines carefully to avoid filing delays.

An OSBP student's dissertation may include work of a collaborative nature that was completed with contributions from colleagues within or outside of Ohio State. If the results of collaborative studies are included in the dissertation document, the defending student's individual contribution to the work must be clearly indicated, and appropriate acknowledgements of additional contributors must be made. Although the format of this "separate author contributions" section is decided at the discretion of the individual dissertation committee, OSBP strongly suggests including explicit author contribution statements placed prominently at the beginning of each dissertation chapter to clarify the role that the defending student and others have played in conducting the thesis work.

The Final Oral Exam Committee consists of the Dissertation Committee (i.e., the Student Advisory Committee) plus a Graduate Faculty Representative (GFR) assigned by the Graduate School. The approved draft of the dissertation must be provided to the GFR as soon as possible after they are assigned.

The final oral exam lasts approximately two hours. The exam should consist of a presentation of the dissertation followed by a private (student and Final Oral Exam Committee only) period of questions and answers for at least one hour. The presentation portion may be public or private, but when practical, OSBP requires the presentation portion to be public. The OSBP program coordinator should be notified when the date, time and location of the presentation has been set in order to provide sufficient notice for dissertation defense announcement to the entire OSBP community. OSBP students and faculty are encouraged to attend dissertation presentations whenever possible. The exam includes, but is not limited to, the dissertation; it should test the quality of the research as well as its originality, independence, significance and perspective in the given field. The work must be deemed by the committee to be a significant scholarly contribution to knowledge in biochemistry.

The final oral exam must take place during official University business hours). All members must participate for the entire exam. The decision discussion occurs in private in the absence of the student. The decision of the committee is considered to be Satisfactory only when the committee unanimously votes affirmatively. The GFR participates in the decision discussion and vote. The first question of the discussion should be whether the GFR thought the exam was fair and of the quality expected by the Graduate School.

Committee members must record their votes on the Report on Final Examination on gradforms.osu.edu, either on a laptop or mobile device after the decision is reached, or immediately thereafter upon the member's return to his or her office. The result must be recorded within 24 hours, but the student should be informed of the result in person immediately after the discussion. If the student fails the final oral exam, the committee must determine whether a second exam is permitted. If a second exam is allowed, it must have the same exam committee. If a second exam is not allowed, or if the student fails the exam a second time, the student will not be permitted to be a doctoral candidate in the same or any other graduate program in the affiliated college(s), but may seek permission to transfer to a Masters program (see section 7.10 of The Graduate School Handbook).

After the exam, the student must make any changes to the dissertation document that are required by the Dissertation Committee, and the committee may then give final approval, which is indicated by the Report on Final Document through gradforms.osu.edu. Committee members other than the advisor, who do not wish to see an amended document, should approve the Report on Final Document at the same time as the Report on Final Examination to prevent the student from missing the filing deadline. Once the advisor approves the final draft of the dissertation on the Report on Final Document, the dissertation must be uploaded to the OhioLINK Electronic Theses and Dissertations web site. For the dissertation to be considered filed, the Report on Final Document must be approved by all committee members including the advisor, and the Graduate School must approve the final formatting of the document. Information on specific deadlines for submission of the Final Document that apply to each term are available on the Graduate School website.

Students who pass the oral exam or file the dissertation after the "regular" deadlines, but by the EOS deadline (the last business day prior to the first day of classes of the following term) will have their degree conferred in the following term, but do not need to register in the following term. Note that students may only participate in Commencement in the term of conferral.

h. Graduation Requirements

In order to graduate, students must (1) have a cumulative GPA of at least 3.0 in all graduate classes; (2) have completed all required courses, including core and biochemistry elective classes; (3) have final grades recorded for all courses by the published deadline; and (4) have met all requirements of the OSBP doctoral degree described in this handbook, including publication of at least one original peer-reviewed first-author research paper by the time of graduation. Co-first author publications are acceptable. Review articles are **not** acceptable. The paper must be published, in press, or unconditionally accepted; submitted manuscripts, manuscripts "in preparation," and theses or abstracts may **not** be counted toward the publication requirement.

The GSC Chair may provisionally sign the Application to Graduate if a first-author paper is not yet accepted by the deadline for that form, but the paper must be accepted by the regular "approved thesis and dissertation documents" deadline (as published by the Graduate School) for the student to graduate that term. If the paper is accepted too late to participate in regular graduation, but before the EOS deadline, the degree can only be conferred on an end-of-semester basis—meaning, the degree is actually conferred in the next term, and the student is not eligible to participate in Commencement until the term of conferral. If the GSC Chair

is not confident that the paper will be accepted by the EOS deadline (for example, if a draft of the paper is not available by the deadline to file the Application to Graduate), the director may decline to approve the application. Note that even if a student has passed her/his final exam but does not have a first-author paper by the EOS deadline, OSBP cannot certify the degree. If this is the case, the student must then register for the following term(s) until the paper is unconditionally accepted in order for the degree to be conferred.

i. Leaving the University

Graduating students typically stay on their GA appointments through the end of the term in which they defend. Be advised that any student who completes all graduation requirements and chooses to leave their graduate associate position prior to the end of the term will be charged by the university for the remaining tuition and fees for that term. If you are unable to make arrangements with your advisor to stay until the end of the term or have a new position that requires you to leave the university earlier than the end of the term, please contact the OSBP director and program coordinator as soon as possible to attempt to make alternate arrangements with the Graduate School to avoid any additional fees.

j. Annual Activity Report

All students are required to submit an Activity Report at the end of each academic year that describes honors and awards, fellowship and grants, publications, presentations, workshops and conferences attended, and other notable events in the format of a *curriculum vitae*. The report is due to the OSBP office (or a scan to osbp@osu.edu) by May 15. Format details are available on the Forms and Deadlines page of the OSBP web site.

VIII. Master's Degree

OSBP is a graduate program leading to a doctoral degree. By rules of the Graduate School, students who pass the candidacy examination may earn a master's degree if (1) it is recommended by the student's advisor and the GSC; (2) the student does not already have an equivalent master's degree in the same field; (3) the student files the Application to Graduate through gradforms.osu.edu by the published deadline; (4) graduation deadlines set by the Graduate School are met; and (5) candidacy has not expired. It is possible to receive the master's degree in the same term as passing the candidacy exam by filing the Application to Graduate on gradforms.osu.edu by the published deadline (the third Friday of the term), which would also require approval of the GSC Chair. See Section 6.1 of the *Graduate School Handbook*.

In general, the program does not recommend filing for the master's degree if the student intends to continue on to complete the doctoral degree.

Students who have not advanced to candidacy are not eligible for a master's degree in the program.

IX. Vacation and Work Policies

a. Vacation Policies

Graduate students do not get extended breaks between terms; graduate student appointments cover the entire calendar year. Graduate students may take holidays, vacations, and leaves within the rules set by the University, Gradate School, program, appointing unit, and advisor. In general, students should **not** plan to take vacations during classes in the Autumn and Spring semesters, or during May, to facilitate required attendance in course work, seminars, and the annual IGP symposium.

First year students must be in Columbus, OH on campus for Fall Semester on the first day of orientation until the last day of final exams, and for Spring Semester on the first day of Spring classes until the end of May after IGP symposium. For students who begin in the Autumn, OSBP is the appointing unit for the summer term following the spring term. Vacations during this summer term are at the advisor's discretion. In general, students should not take more than a total of three weeks (15 working days) of vacation in the first year. Students who conduct a laboratory rotation in the early-start Summer term before the first Autumn semester must work in the lab at least 10 weeks during that first summer term, and must be in town for orientation.

After the first year, vacation policies are at the discretion of the advisor and the appointing unit, so long as they do not conflict with Graduate School, program or curricular requirements. As point of reference, full time Ohio State professional staff members generally get 10 paid holidays and accrue 12 days of vacation per year.

Please inform the OSBP office (osbp@osu.edu) of vacations in excess of two weeks. International students should inform the OSBP office of any trips outside of the U.S. Please provide contact information in case you need to be reached during such extended trips.

b. Work Policies

OSBP students may not hold outside employment without the permission of the GSC (i.e., by petition). Outside employment is generally not allowed. Even if the GSC grants permission, such employment is at the discretion of the advisor and subject to the policies of the appointing unit.

c. Family and Medical Leave

Family and medical leave policies are governed by the Graduate School and the Human Resources policies of the appointing unit. It is important to understand that GA-appointed students are not eligible for the protections for workers under the Family and Medical Leave Act (FMLA), because GA appointments are 50% appointments and do not exceed 1,250 hours per year. Moreover, Ohio State faculty and staff leave policies do not apply to students.

GAs with at least a 50% FTE appointment, who have completed at least two consecutive semesters of GA appointment and are in good academic standing, are eligible for up to 6 weeks of paid leave for birth mothers and up to 3 weeks of paid leave for fathers and adoptive parents, up to the last day of the appointment. Similarly, qualified GAs are eligible for up to six weeks of paid leave (up to the end of the appointment) for serious health conditions or to care for a family member with a serious health condition. "Paid leave"

here means maintenance of 100% of stipend, fee authorization and other benefits associated with the appointment. Short-term absences (usually 1-3 days but possibly up to 2 weeks as warranted) are generally available to GAs, fellows and trainees for personal illness or in the event of the death of an immediate family member with the permission of the advisor and other relevant immediate supervisors (such as a TA coordinator). See Appendix E of the *Graduate School Handbook* for more information.

Although GAs are not governed by the same benefits rules as faculty and staff, OSBP encourages advisors and appointing units to work to achieve reasonable and equitable solutions for student family and medical issues. As a point of reference, full-time biweekly staff at Ohio State accrue the equivalent of 15 sick days per year. FMLA entitles eligible 60+% FTE employees who have worked longer than a year to take 12 weeks of unpaid, job-protected leave per year for birth of a child, adoption, care of a spouse, child or parent who is seriously ill, or serious illness of the employee; Ohio State extends this leave to all 50+% FTE faculty and staff. Full-time Ohio State faculty and staff are eligible for six weeks of paid parental leave for a birth mother or three weeks of paid leave for a father or adoptive parent.

d. Effects of Fellowships and Other Funding

Fellows and trainees funded by external agencies are also subject to vacation, work, and leave policies established by the funding agency.

X. Safety

It is the responsibility of the research advisor, including laboratory rotation advisors, to ensure that OSBP students have fulfilled any necessary safety training requirements before beginning work in the laboratory. However, students should proactively verify at the beginning of each rotation and upon joining a lab that the necessary requirements have been met.

At a minimum, students should take the EHS Online training modules deemed necessary by the advisor in accord with relevant University, college and departmental policy. OSU requires that all laboratory personnel take the OSU Building Emergency Action Plan and Laboratory Standard Training modules. OSBP additionally recommends the Personal Protective Equipment and Chemical Safety modules. Biological Safety Training for BSL2, Bloodborne Pathogens Initial Training, and Infectious Waste Disposal should also be considered. The advisor must ensure that students receive all of the required training, including additional chemical safety, biosafety, laser and radiation safety, electrical safety, or those required in connection with animal or human subjects work or other specialized research.

The Department of Chemistry and Biochemistry offers a 1-credit hour laboratory safety course (CHEM 6781) as an evening course during Autumn semester Session 2. Students interested in enrolling in this course should consult the OSBP Director.

XI. Ethics and Misconduct

a. Academic and Research Misconduct

Students must be familiar with standards for ethical scientific and academic conduct set by the University and accepted broadly both nationally and internationally. The required course **OSBP 7600** forms the core training for responsible conduct of research and conducting research with rigor and reproducibility. Additional training in these areas may be required by the advisor, training program, or other support mechanism (such as a fellowship sponsor).

All faculty, staff and students who conduct research at Ohio State are required to complete Responsible Conduct of Research (RCR) training by the CITI RCR online course. Students are provided with a link to the required training module during OSBP orientation (http://orc.osu.edu/regulations-policies/rcr/) and instructed to complete the online course for biomedical research prior to beginning their first laboratory rotation.

The Code of Student Conduct is available at the Office of Student Life website (studentlife.osu.edu/csc) and must be reviewed by all students (especially rule 3335-23-04 Prohibited Conduct). Academic misconduct allegations are adjudicated by the **Committee on Academic Misconduct** (COAM) (oaa.osu.edu/academic-integrity-and-misconduct). It is the responsibility of the student to be familiar with the Code of Student Conduct. Lack of awareness of the Code is not considered to be an excuse or defense if a case of alleged misconduct is referred to COAM. Materials for all OSBP program requirements are expected to be the student's own work and in the student's own words, with proper attribution of borrowed ideas. Plagiarism is the representation of another's words or ideas as one's own, and it is prohibited by the Code. Plagiarism includes unacknowledged word-for-word use or close paraphrasing of another person's work, or unacknowledged use of another person's ideas.

Research misconduct means fabrication, falsification, or plagiarism in proposing, performing, or reviewing research, or in reporting research results. The University Policy and Procedures Concerning Research Misconduct is available at the Office for Research website (http://orc.osu.edu/files/Misconduct_Policy.pdf) and should be reviewed by all students. Research misconduct allegations are adjudicated by the Office of Research Compliance at the direction of the Vice President for Research.

Sanctions for academic misconduct in graduate classes or program requirements (such as candidacy or the dissertation), or for research misconduct, are likely to entail dismissal from the program and University, and even revocation of degree, but in some cases may involve failing grades, probation, or other measures.

The Graduate Student Code of Research and Scholarly Conduct (Appendix C of the *Graduate School Handbook*) states:

> Graduate students and Graduate Faculty aspire to professional behavior that is consistent with the highest ethical and moral standards. The Graduate School at The Ohio State University expects that graduate students will demonstrate responsibility and integrity in pursuing their creative and scholarly interests. The academic enterprise is dependent upon such behavior. Graduate students are responsible for learning about appropriate standards for ethical research and scholarly conduct and for following all university policies related to ethical research and scholarly conduct.
>
> When graduate students join the Ohio State community, they become members of disciplinary,

scholarly, and professional communities that extend beyond the university. Graduate students are expected to learn, respect, and abide by the professional codes of ethics and responsibilities that are commonly accepted in their field of study or area of research. These codes include but are not limited to the following: a responsibility to contribute an original body of work to one's chosen discipline and the recognition that one's work is based on the work of others which must be respected and properly acknowledged. Graduate students also have the responsibility to treat university faculty, staff, and other students respectfully and professionally.

Graduate Faculty, advisors, and graduate programs should actively encourage their students to participate as members of their chosen disciplinary, scholarly, and professional communities. Graduate students should be encouraged to seek and share knowledge wherever and whenever possible. Academic advisors and other faculty members should educate graduate students through example and discussion, addressing such issues as academic honesty, research, publication, recruitment, and hiring practices, and applicable fellowship and graduate associateship responsibilities. Disciplinary codes of ethics and norms should be discussed among graduate students and faculty. Such communication is a means of setting high standards of behavior in graduate study and beyond.

b. Responsible Research Practices

In addition to training provided in the required OSBP 7600 first year course, advisors are responsible for ensuring that students receive proper training for the ethical conduct of research involving animals and human subjects, and in the conduct of research involving recombinant DNA, or hazardous or regulated biological materials. Information about the Institutional Animal Care and Use Committee (IACUC), Institutional Review Board (IRB), and Institutional Biosafety Committee (IBC) and their associated policies, procedures and training can be found on the web site of the Office of Research Compliance (orc.osu.edu).

c. Sexual Harassment and Title IX

The University policy on sexual misconduct states:

> Members of the university community, vendors, and visitors have the right to be free from all forms of sexual misconduct. Sexual misconduct is conduct of a sexual nature that is nonconsensual, or has the effect of threatening, intimidating, or coercing a person. Sexual misconduct includes sexual harassment, sexual violence, and relationship violence. Sexual misconduct impedes the realization of the university's mission of distinction in education, scholarship, and service. All members of the university community are expected to conduct themselves in a manner that does not infringe upon the rights of others and maintain an environment free from sexual misconduct.

All university employees have an obligation to report sexual assaults. Many OSU employees in human resources and supervisory positions (including faculty members) have an obligation to report sexual harassment. The university strongly discourages romantic and/or sexual relationships between faculty and graduate students in the same department. Relationships between supervisors and employees or between

students and others in a supervisory, teaching, evaluation, or advising position are prohibited. The full policy on sexual misconduct can be found on the Human Resources (hr.osu.edu) or Title IX (titleix.osu.edu) websites. All OSBP students must complete all required sexual harassment and Title IX training mandated by the University to maintain good standing in the program. Fellows are not classified as employees and are not required to complete the required sexual harassment and Title IX training.

XII. Petitions, Grievances and Crises

a. Petitions

Petitions to deviate from any OSBP policies stated in this handbook should be sent to the GSC Chair and are decided by the GSC.

b. Grievances

Grievances related to program activities and requirements should be sent to the GSC Chair, or, if that represents a conflict of interest, another member of the GSC (typically the Associate Director). The GSC Chair (or other GSC member) will attempt to resolve the grievance, with the help of other GSCs members as necessary. The GSC Chair or other GSC member contacted will keep the initial discussion of the grievance confidential; however, the GSC Chair or other GSC member will break this confidence if she or he believes that the student or someone else is in imminent danger, or if University policy or applicable law compels disclosure. Complaints of discrimination or harassment (sexual or otherwise) or allegations of academic or research misconduct must be directed to the appropriate offices (Office of Student Conduct, Office of Human Resources, Committee on Academic Misconduct, or Office of Research Compliance) as specified by University policies. Grievances related to graduate examinations and graduate associate appointments are reviewed by the Graduate School.

c. Crises

The Counseling and Consultation Service (CCS) of the Office of Student Life provides services to undergraduate, graduate and professional students (and their spouses/partners if covered by CSHI) for issues such as stress management, anxiety, depression, relationship problems, transitions in life, identity exploration, substance use, eating concerns, feeling overwhelmed, and academic adjustment. Student should call 614-292-5766 to schedule an appointment.

If you or someone you know is in imminent danger to themselves or others, go to the nearest ER or call 911. If you are feeling suicidal, please contact someone who can help you, such as the Columbus Suicide Prevention Hotline (614-221-5445) or the National Suicide Prevention Lifeline (800-273-TALK). Students who are experiencing a psychological crisis should call CCS at 614-292-5766 during business hours and will be contacted by a trained clinician by the end of the next business day.

Faculty who are concerned about non-emergency mental health issues with students can contact the director of CCS, Micky Sharma, Psy.D., at sharma.369@osu.edu or by calling 614-292-5766. ***For mental health emergencies, call 911.***

XIII. Program Governance

a. Program History

The Ohio State Biochemistry Program was first formed in 1983 to combine the graduate faculty resources of the Department of Biochemistry (College of Biological Sciences), the Department of Physiological Chemistry (College of Medicine), and the Department of Chemistry (College of Mathematical & Physical Sciences), at the direction of the Provost. In 1988, the program was re-organized according to a set of principles set forth by the Dean of the Graduate School, and a Charter based on those principles was ratified in 1990. The reorganization opened the program to biochemists from across the university. In 1996, an Ohio Board of Regents review of all biomedical programs in the state affirmed OSBP as the sole mechanism for integration of biochemical graduate training at OSU, effectively merging the departmental graduate programs from the Department of Biochemistry and Department of Medical Biochemistry into OSBP. In 1998, an administrative reorganization of the Interdisciplinary Graduate Programs shifted the oversight of the program from the Graduate School to the Council of Life Sciences Deans, and the program operated this way for over a decade.

In 2009, the program faculty amended the charter to shift greater responsibility to the Department of Biochemistry, the Department of Molecular & Cellular Biochemistry, and the Department of Chemistry in appointing the director and managing the program. In 2010, the Colleges of Biological Sciences and Mathematical & Physical Sciences were integrated into the re-unified College of Arts & Sciences, and in 2012, the Department of Biochemistry and the Department of Chemistry merged into a single department. At the same time, in 2008, the Graduate School's doctoral program assessment resulted in the formation of a Task Force on the Life Sciences, and their 2009 report recommended the formation of the Life Sciences Network (LSN) as an umbrella administrative structure for the interdisciplinary graduate programs through the Graduate School. The LSN was implemented in the fall of 2011. The life sciences IGPs were returned to the direct supervision of the Graduate School in the summer of 2015. Also, the Department of Molecular & Cellular Biochemistry merged with the Department of Pharmacology to form the Department of Biological Chemistry & Pharmacology in 2015.

b. Current Practice

OSBP is currently administered through the Graduate School. It still mainly functions according to the 1990 Charter, but with key changes from the 2009 amendment to the Charter (especially Part B) shifting key program management responsibilities to the Department of Chemistry & Biochemistry and the Department of Biological Chemistry & Pharmacology. Briefly, current practice is:

- The Director of the program and all committee members are drawn from the Graduate Faculty of the program.
- The Director is selected by the Chairs of the Department of Chemistry & Biochemistry (C&B) and the Department of Biological Chemistry & Pharmacology (BCP), and appointed at the Graduate School. The Director serves as the Graduate Studies Committee Chair. The Director is appointed for a 3-year renewable term commencing on September 1. Common practice has been to alternate

between C&B and BCP faculty members.

- The Graduate Studies Committee is made up of the Director/Chair and the chairs of the four standing subcommittees. If none of the standing subcommittee chairs is from outside C&B and BCP, at least one an *ad hoc* outside member is appointed by the chair, with up to 3 *ad hoc* members. The Graduate Studies Committee has final authority on all graduate studies matters, and in particular enforces program rules and adjudicates petitions to deviate from those rules.
- The four standing subcommittees of the GSC are Admissions, Curriculum, Recruiting, and Seminar. The chair and three other members of each committee are appointed by the Director in consultation with department chairs. Each committee should include representation from C&B and BCP, as well as OSBP faculty from other affiliated departments. Committee terms commence on September 1.
- The Admissions committee is responsible for the review of all admissions files, interviewing applicants during recruitment visits, and recommending fellowship nominees.
- The Curriculum committee is responsible for advising the GSC on all curricular issues, including approval of core and elective classes, transfer credit, and individual petitions on curricular issues. It also oversees program assessment.
- The Recruiting committee is responsible for planning and organizing programs to improve the size and quality of the applicant pool, and in particular helps organize the interviews and recruiting visits and the creation of materials such as posters and slide presentations for recruiting.
- The Seminar committee is responsible for overseeing the OSBP student seminar and external seminar programs. At least one committee member serves on the MLS speaker approval committee. The committee also works with the Director to coordinate teaching and continuity in the student seminar courses.
- The Director serves as one of the instructors of the OSBP 7600 First Year Mentoring Class.
- OSBP is administered by a Program Coordinator who reports to the Director and is appointed at the Graduate School. The Program Coordinator also works with the other life sciences IGP Program Coordinators and Graduate School staff on cooperative activities.
- Faculty members eligible for the Graduate Faculty of the University may apply to join the Graduate Faculty of the program (P status) by presenting evidence of training and research in biochemistry. Beginning in 2009, faculty must hold at least a courtesy appointment in C&B or BCP to apply to join the OSBP faculty or must be a member of a Department that has committed to support of OSBP as a signatory to the OSBP P-status Agreement. Faculty are admitted by majority vote of the GSC.
- All OSBP faculty are evaluated at least every three years by the GSC for continued qualifications, participation and mentoring record. Faculty can be removed by majority vote of the GSC.

c. Director History

- Charles Bell, Dept. of Biological Chemistry & Pharmacology, 2020-present
- Jane Jackman, Dept. of Chemistry & Biochemistry, 2017-2020
- Thomas Magliery, Dept. of Chemistry & Biochemistry, 2013-2017
- Michael Ibba, Dept. of Microbiology, 2012-2013
- Jill Rafael-Fortney, Dept. of Molecular & Cellular Biochemistry, 2009-2012
- Ross Dalbey, Dept. of Chemistry, 2004-2009

- Donald Dean, Dept. of Biochemistry, 2001-2004
- Russ Hille, Dept. of Molecular & Cellular Biochemistry, 1998-2001
- Robert Brueggemeier, College of Pharmacy, 1994-1998
- Ron Trewyn, Dept. of Medical Biochemistry, 1989-1991, 1993-1994

XIV. Faculty Membership

a. Joining the OSBP Faculty

Since the OSBP charter amendment approved in 2009, only faculty of the Department of Chemistry & Biochemistry or Department of Biological Chemistry & Pharmacology may newly apply to join the program faculty. Courtesy or regular salaried appointments in these Departments may also apply. In addition, faculty from certain other Departments on campus may apply for OSBP membership provided that an MOU is in place. Interested faculty should contact the GSC Chair to determine whether their Department is a signatory to the OSBP P-status Faculty MOU. As OSBP only accepts doctoral students, only tenure-track and research-track (not clinical) faculty may apply (as required by the Graduate School for P status, see the *Graduate School Handbook* Section 12.1). To apply for membership, eligible faculty must provide a cover letter explaining interest in the program and highlighting biochemical expertise and a full *curriculum vitae* to the GSC Chair. Faculty members are admitted by simple majority vote of the GSC.

b. Review and Responsibilities of Faculty

All faculty members are reviewed on a 3-year cycle, or more frequently if needed. Review items include program participation, mentoring record, and maintenance of membership admission standards. Lack of response for request of review materials, after reasonable reminders are issued, is sufficient reason for removal from the program faculty. Faculty not meeting these requirements may be removed by majority vote of the GSC.

All OSBP faculty are expected to attend the LS-IGP Symposium each year. Faculty with current advisees will automatically be signed up for abstract, poster, or oral presentation judging, and all faculty are encouraged to volunteer for judging duties.

c. Emeritus and Other Retired Faculty

Emeritus faculty may retain their status on the Graduate Faculty by written request and approval of the GSC, the department chair and dean of the college, in specified, renewable terms of no longer than five years. In general, retirees or faculty who leave the university may otherwise remain advisor to or on the dissertation committees of doctoral students who have advanced to candidacy, but may not serve as the advisor to a new student. See the *Graduate School Handbook* Section 12.5 for more details.

d. Current Faculty Membership

The most up-to-date listing of OSBP Graduate Faculty is available on the web site (Faculty tab). The active faculty membership as of September 1, 2022 is:

Federica Accornero, Dept. of Physiology & Cell Biology
Gunjan Agarwal, Dept. of Mechanical & Aerospace Engineering
Juan Alfonzo, Dept. of Microbiology
Irina Artsimovitch, Dept. of Microbiology
Abraham Badu-Tawiah, Dept. of Chemistry & Biochemistry
Kedryn Baskin, Dept. of Physiology & Cell Biology
Vladislav Belyy, Dept. of Chemistry & Biochemistry
Charles Bell, Dept. of Biological Chemistry & Pharmacology
David Bisaro, Dept. of Molecular Genetics
Dennis Bong, Dept. of Chemistry & Biochemistry
Rafael Brüschweiler, Dept. of Chemistry & Biochemistry
Christin Burd, Dept. of Molecular Genetics
Craig Burd, Dept. of Molecular Genetics
Arthur Burghes, Dept. of Biological Chemistry & Pharmacology
Jeffrey Chalmers, Dept. of Chemical & Biomolecular Engineering
Long-Sheng Chang, Dept. of Pediatrics (Nationwide Children's)
Krishna Chinthalapudi, Dept. of Physiology and Cell Biology
Nam Chu, Dept. of Cancer Biology & Genetics
Ross Dalbey, Dept. of Chemistry & Biochemistry
Harold Fisk, Dept. of Molecular Genetics
Mark Foster, Dept. of Chemistry & Biochemistry
Kurt Fredrick, Dept. of Microbiology
Michael Freitas, Dept. of Cancer Biology & Genetics
Tianmin Fu, Dept. of Biological Chemistry & Pharmacology
Jonathan Godbout, Dept. of Neuroscience
J. Aaron Goldman, Dept. of Biological Chemistry & Pharmacology
Venkat Gopalan, Dept. of Chemistry & Biochemistry
Patrick Green, Dept. of Veterinary Biosciences
Chen Gu, Dept. of Biological Chemistry & Pharmacology
Howard Gu, Dept. of Biological Chemistry & Pharmacology
Patrice Hamel, Dept. of Molecular Genetics
Sarah Heissler, Dept. of Physiology & Cell Biology
Tina Henkin, Dept. of Microbiology
Paul Herman, Dept. of Molecular Genetics
Amanda Hummon, Dept. of Chemistry & Biochemistry
Jane Jackman, Dept. of Chemistry & Biochemistry
Christopher Jaroniec, Dept. of Chemistry & Biochemistry
Kou-San Ju, Dept. of Microbiology
Michael Kearse, Dept. of Biological Chemistry & Pharmacology
Stephen Kolb, Dept. of Neurology
Joseph Krzycki, Dept. of Microbiology
Dmitri Kudryashov, Dept. of Chemistry & Biochemistry
Comert Kural, Dept. of Physics

Jeffrey Kuret, Dept. of Biological Chemistry & Pharmacology
George Kyriazis, Dept. of Biological Chemistry & Pharmacology
Beth Lee, Dept. of Physiology & Cell Biology
E. Douglas Lewandowski, Dept. of Internal Medicine
Chien-liang "Glenn" Lin, Dept. of Neuroscience
Steffen Lindert, Dept. of Chemistry & Biochemistry
Jianjie Ma, Dept. of Surgery
Thomas Magliery, Dept. of Chemistry & Biochemistry
Kamal Mehta, Dept. of Biological Chemistry & Pharmacology
Maria Mihaylova, Dept. of Biological Chemistry & Pharmacology
Karin Musier-Forsyth, Dept. of Chemistry & Biochemistry
Kotaro Nakanishi, Dept. of Chemistry & Biochemistry
Justin North, Dept. of Microbiology
Stephen Osmani, Dept. of Molecular Genetics
Jennifer Ottesen, Dept. of Chemistry & Biochemistry
Andre Palmer, Dept. of Chemical & Biomolecular Engineering
Hay-Oak Park, Dept. of Molecular Genetics
Mark Parthun, Dept. of Biological Chemistry & Pharmacology
Mark Peeples, Dept. of Pediatrics (Nationwide Children's)
Dehua Pei, Dept. of Chemistry & Biochemistry
Michael Poirier, Dept. of Physics
Jill Rafael-Fortney, Dept. of Physiology & Cell Biology
Matthew Ringel, Dept. of Internal Medicine
Natividad "Natacha" Ruiz, Dept. of Microbiology
Zac Schultz, Dept. of Chemistry & Biochemistry
Brian Searle, Dept. of Biomedical Informatics
Hannah Shafaat, Dept. of Chemistry & Biochemistry
David Somers, Dept. of Molecular Genetics
Marcos Sotomayor, Dept. of Molecular & Cellular Biochemistry
Benjamin Stanton, Dept. of Pediatrics
Wen Tang, Dept. of Biological Chemistry & Pharmacology
Emily Theisen, Dept. of Pediatrics
Li-Chun Tu, Dept. of Biological Chemistry & Pharmacology
Claudia Turro, Dept. of Chemistry & Biochemistry
Frederick Villamena, Dept. of Biological Chemistry & Pharmacology
Noah Weisleder, Dept. of Physiology & Cell Biology
Damien Wilburn, Dept. of Chemistry & Biochemistry
David Wood, Dept. of Chemical & Biomolecular Engineering
Jian-Qiu Wu, Dept. of Molecular Genetics
Lai-Chu Wu, Dept. of Biological Chemistry & Pharmacology
Zhengrong "Justin" Wu, Dept. of Chemistry & Biochemistry
Vicki Wysocki, Dept. of Chemistry & Biochemistry
Yong Xia, Dept. of Internal Medicine
Shang-Tian Yang, Dept. of Chemical & Biomolecular Engineering

Sung Ok Yoon, Dept. of Biological Chemistry & Pharmacology
Qingfei Zheng, Dept. of Radiation Oncology
Dongping Zhong, Dept. of Physics

Appendix A: Typical Schedule and Timeline of Events

a. Typical Schedule

Full course names and numbers are given in Appendix B. Approved elective options are given in Appendix B. Electives should be finished by Spring of the second year, except by permission of the GSC Chair, and must be completed by graduation. Enrollment in at least one (minimum 1.5 cr hr) elective course in Quantitative Biology (see Appendix B) is required. For half-term (7-week) courses, the relevant session is indicated by (S1) or (S2), corresponding to Session 1 or Session 2, respectively. Credit hours are indicated in brackets. Graduate research is 8999 in most departments.

Yr	Autumn	Spring	Summer
1	6701 Molecular Biology [3] 6761 Macromolecules [3] 7193 Rotation 1 [3] ***(S1)*** 7193 Rotation 2 [3] ***(S2)*** 7193 Director [3] 7600 Mentoring [1] 7700.01 Student Seminar [1] 7890 Colloquium [1]	Elective(s) [suggested minimum 3] 7193 Rotation 1 [3] ***(S1)*** 7193 Rotation/Advisor [3] ***(S2)*** 7193 Director [4] 7700 Student Seminar [1] 7890 Colloquium [1]	8999 Research [4]
2	Elective(s) [suggested minimum 3] 7700 Student Seminar [1] 7890 Colloquium [1] 8999 Research [8+]*	Elective(s) [if needed to reach 9 total] 7700 Student Seminar [1] 7890 Colloquium [1] 8999 Research [8+]*	8999 Research [4]
3	8999 Research [3]***	8999 Research [3]	8999 Research [3]
4	8999 Research [3]	8999 Research [3]	8999 Research [3]
5	8999 Research [3]	8999 Research [3]	8999 Research [3]

* The number of 8999 or equivalent course research credits can be adjusted to fit the minimum enrollment needs of the student according to his/her appointment. The maximum 18 credit hour enrollment is recommended during years 1 and 2 so that the student will earn the 80 credit hours required for graduation prior to the end of the 5th year.
*** Students are permitted to enroll in 1 cr hr of any seminar course (OSBP 7890, or equivalent) during any semester in years 3 and beyond, and should decrease enrollment in 8999 Research credit hours to 2 in this case.

b. Timeline of Events

Year 1

- Fulfill necessary safety training
- Complete core courses and attend first year orientation (OSBP 7600)
- Attend Student Seminar (OSBP 7700) in Autumn and Spring
- Attend MLS Seminar (OSBP 7890 Colloquium)
- Complete two 7-week laboratory rotations in Autumn semester
- Complete a third 7-week laboratory rotation in Spring semester (or 1-10 week early start rotation in Summer)
- Choose a faculty research advisor and begin dissertation research in Spring semester

- Submit an Activity Report by May 15
- Attend IGP Annual Symposium in May
- Select a Student Advisory Committee by June 30

Year 2

- Complete elective courses
- Attend Student Seminar (OSBP 7700) in Autumn and Spring
- Attend MLS Seminar (OSBP 7890 Colloquium)
- Continue dissertation research
- Submit proposal aims to Candidacy Committee in Autumn
- Submit proposal to Candidacy Committee in Spring and file Application for Candidacy
- Submit an Activity Report by May 15
- Attend IGP Annual Symposium in May
- Take Oral Candidacy Exam and advance to candidacy no later than end of Summer

Year 3

- Give a research presentation (in either 3rd or 4th year)
- Continue dissertation research
- Submit an Activity Report by May 15
- Attend IGP Annual Symposium in May
- Meet with Advisory Committee in Summer or Autumn and submit Post-Candidacy Progress Report by December 31

Year 4 and additional years if necessary

- Give a research presentation (if not completed during Year 3)
- Continue dissertation research
- Submit an Activity Report by May 15
- Attend IGP Annual Symposium in May and give a poster or oral presentation
- Meet with Advisory Committee in Summer or Autumn and submit Post-Candidacy Progress Report by December 31

Dissertation Year (typically Year 5 or Year 6)

- Continue and conclude dissertation research
- Write dissertation
- Submit an Activity Report by May 15
- Attend IGP Annual Symposium in May and give a poster or oral presentation
- If necessary, meet with Advisory Committee in Summer or Autumn and submit Post-Candidacy Progress Report by December 31
- Publish one first-author research paper if not completed in previous years
- Complete the Application to Graduate on gradforms.osu.edu and the OSBP Ready-to-Graduate Checklist each semester you apply to graduate
- Submit dissertation to committee and file Application for Final Examination

- Publicly present dissertation and take final oral exam
- Obtain final approval for dissertation and submit to OhioLINK

Appendix B: Core Classes

Beginning with the 2020 incoming class, the following courses are accepted to meet the OSBP core requirements:

Molecular Biology
Biochem 6701 or Biophrm 6701 (these are the same class, sign up for either cross-listed class)
Advanced Biochemistry: Molecular Biology
Autumn – 3 credit hours

Proteins and Nucleic Acids
Biochem 6761 or Biophrm 6761 (these are the same class, sign up for either cross-listed class)
Advanced Biochemistry: Macromolecular Structure and Function
Autumn [3 credit hours]

Appendix C: Approved Biochemistry Electives

Below is a list of classes approved to fulfill the biochemistry elective requirement. Students wishing to count electives that are not on the approved list towards their required biochemistry elective credits must submit the proposed elective course description (syllabus) with an explanation from the student and advisor as to why the course is necessary towards coursework completion of the doctoral degree to the GSC Chair. Elective courses must generally be at the 6000 level or above and graded A-E. It is advised that the student also consults the Advisory Committee regarding proposed elective courses.

Courses that fulfill the Quantitative Biology requirement are indicated with an asterisk (*)

Biochemistry (BIOCHEM)

Plant Biochemistry I
Course Number: 5735
3 credits

Advanced Biochemistry: Enzymes
Course Number 6762
1.5 credits

Advanced Biochemistry: Membranes and Lipids
Course Number 6763
1.5 credits

Advanced Biochemistry: Physical Biochemistry
Course Number: 6765/.01
1.5 or 3 credits

Advanced Biochemistry: Protein Engineering
Course Number: 7770/.01
1.5 or 3 credits

Special Topics in Biophysical Chemistry
Course Number: 7775
1.5 or 3 credits

Advanced Biochemistry: Nucleic Acids
Course Number: 7766/.01
1.5 credits

Advanced Biochemistry: Biomolecular NMR
Course Number: 8900/.01
1.5 or 3 credits

Advanced Topics in Biochemistry
Course Number: 8990
1 or 1.5 credits

Biological Chemistry & Pharmacology (BIOPHRM)

Advanced Biochemistry: Integration of Metabolism 1
Course Number: 7764
1 credit

Advanced Biochemistry: Integration of Metabolism 2
Course Number: 7765
1 credit

Gene Expression: Post-Transcriptional Control
Course Number: 7807
3 credits

Cell Death and Cancer Immune Environment
Course Number: 7823
2 credits

Signaling Pathways and Human Disease
Course Number: 7828
2 credits

Eukaryotic Genome: Structure and Expression
Course Number: 7831
2 credits

Biomedical Informatics (BMI)

Introduction to Bioinformatics
Course Number: 5730
3 credits

Cancer Biology & Genetics (CBG)

Cellular and Molecular Immunology
Course Number: 7010
3 credits

Human Cancer Genetics and Epigenetics
Course Number: 7340
2 credits

Molecular Biology and Pathogenesis of Viruses
Course Number: 7741
5 credits

Mass Spectrometry and Proteomics
Course Number: 8040
3 Credits

Biochemical Mechanisms of Carcinogenesis
Course Number: 8270
2 credits

Current Topics in Human Cancer and Human Genetics
Course Number: 8310
2 credits

Chemistry (CHEM)

Basic Organic Reaction Mechanism
Course Number: 6410
1.5 credits

Stereochemistry and Conformational Analysis
Course Number: 6420
1.5 credits

Introduction to Organic Synthesis
Course Number: 6430
1.5 credits

Introduction to Physical Organic Chemistry
Course Number: 6440
1.5 credits

Thermodynamics
Course Number: 6520
1.5 credits

Kinetics
Course Number: 6530
1.5 credits

Mass Spectrometry
Course Number: 7150
3 credits

Inorganic Biochemistry
Course Number: 7360
1.5 credits

Kinetics, Catalysis, and Transition State Theory
Course Number: 7440
1.5 credits

Advanced Organic Reaction Mechanisms
Course Number: 7460
1.5 credits

Computational Chemistry
Course Number: 7470
1.5 credits

Advanced Topics in Analytical Chemistry
Course Number: 8199
1.5 credits

Chemical & Biomolecular Engineering (CBE)

Molecular Informatics
Course Number: 5734
3 credits

Food Science & Technology (FDSCTE)

Food and Nutritional Toxicology
Course Number: 7620
2 credits

Food Carbohydrates and Proteins
Course Number: 7640
3 credits

Food Flavors and Lipids
Course Number: 7650
3 credits

Microbiology (MICRBIO)

Microbial Physiology and Biochemistry
Course Number: 6020
3 credits

Advanced Microbial Genetics
Course Number: 6080
3 credits

Cellular and Molecular Immunology
Course Number: 7010
3 credits

Advanced Topics in Molecular Microbiology
Course Number: 7060
2 credits

Antibiotics
Course Number: 7070
3 credits

Advanced Cellular Immunology
Course Number: 8032
1 credit

The RNA World
Course Number: 8050
2 credits

Molecular Genetics (MOLGEN)

Analysis and Interpretation of Biological Data
Course Number: 5650
3 credits

Systems of Genetic Analysis
Course Number: 5700
3 credits

Advances in Cell Biology
Course Number: 5705
2 credits

Developmental Genetics
Course Number: 5715
2 credits

Human Genetics
Course Number: 5733
2 credits

Plant Biochemistry
Course Number: 5735
3 credits
Current Topics in Signal Transduction
Course Number: 5796
1 credit

Reproductive Biology of Flowering Plants
Course Number: 6741
2 credits

Special Topics in Molecular Genetics
Course Number: 6795
1 credit

Molecular Biology and Pathogenesis of Viruses
Course Number: 7741
5 credits

Gene Expression: Transcriptional Control
Course Number: 7806
2 credits

Neurological Surgery (NEURSGY)

Biology of the Tumor Microenvironment
Course Number: 8250
2 credits

Physics (PHYSICS)

Special Topics in Biophysics
Course Number: 8809.01
3 credits

Appendix D: Proposal Writing Information

This information about writing NIH grant proposals should be useful in preparing the Candidacy proposal. The exact format of your proposal, within the rules set in Section VII.d, is at the discretion of the Advisor and the Candidacy Exam Committee.

Selected From the *SF424 (R&R) Application Guide for NIH and Other PHS Entities*:
https://grants.nih.gov/grants/how-to-apply-application-guide/forms-e/general-forms-e.pdf

Specific Aims…
State concisely the goals of the proposed research and summarize the expected outcome(s), including the impact that the results of the proposed research will exert on the research field(s) involved.

List succinctly the specific objectives of the research proposed, e.g., to test a stated hypothesis, create a novel design, solve a specific problem, challenge an existing paradigm or clinical practice, address a critical barrier to progress in the field, or develop new technology.

Research Strategy…
Organize the Research Strategy in the specified order using the instructions provided below. Start each section with the appropriate section heading—Significance, Innovation, Approach. Cite published experimental details in the Research Strategy section and provide the full reference in the Bibliography and References Cited section…

(a) Significance

- Explain the importance of the problem or critical barrier to progress in the field that the proposed project addresses.
- Explain how the proposed project will improve scientific knowledge, technical capability, and/or clinical practice in one or more broad fields.
- Describe how the concepts, methods, technologies, treatments, services, or preventative interventions that drive this field will be changed if the proposed aims are achieved.

(b) Innovation

- Explain how the application challenges current research or clinical practice paradigms.
- Describe any novel theoretical concepts, approaches or methodologies, instrumentation or interventions to be developed or used, and any advantage over existing methodologies, instrumentation, or interventions
- Explain any refinements, improvements, or new applications of theoretical concepts, approaches or methodologies, instrumentation, or interventions

(c) Approach

- Describe the overall strategy, methodology, and analyses to be used to accomplish the specific aims of the project. …[I]nclude how the data will be collected, analyzed, and interpreted as well as any resource sharing plans as appropriate.

- Discuss potential problems, alternative strategies, and benchmarks for success anticipated to achieve the aims.
- If the project is in the early stages of development, describe any strategy to establish feasibility, and address the management of any high risk aspects of the proposed work.
- Point out any procedures, situations, or materials that may be hazardous to personnel and precautions to be exercised…

If an applicant has multiple Specific Aims, then the applicant may address Significance, Innovation and Approach for each Specific Aim individually, or may address Significance, Innovation and Approach for all of the Specific Aims collectively…

For new applications, include information on preliminary studies, if any. Discuss the applicant's preliminary studies, data and/or experience pertinent to this application. When applicable, provide a succinct account of published and unpublished results, indicating progress toward their achievement.

Selected From *NIH Grants & Funding – Writing Your Proposal* Web Page
http://grants.nih.gov/grants/writing_application.htm

NIH Peer Review Criteria…

Significance. Does the project address an important problem or a critical barrier to progress in the field? If the aims of the project are achieved, how will scientific knowledge, technical capability, and/or clinical practice be improved? How will successful completion of the aims change the concepts, methods, technologies, treatments, services, or preventative interventions that drive this field? …

Innovation. Does the application challenge and seek to shift current research or clinical practice paradigms by utilizing novel theoretical concepts, approaches or methodologies, instrumentation, or interventions? Are the concepts, approaches or methodologies, instrumentation, or interventions novel to one field of research or novel in a broad sense? Is a refinement, improvement, or new application of theoretical concepts, approaches or methodologies, instrumentation, or interventions proposed?

Approach. Are the overall strategy, methodology, and analyses well-reasoned and appropriate to accomplish the specific aims of the project? Are potential problems, alternative strategies, and benchmarks for success presented? If the project is in the early stages of development, will the strategy establish feasibility and will particularly risky aspects be managed? If the project involves clinical research, are the plans for 1) protection of human subjects from research risks, and 2) inclusion of minorities and members of both sexes/genders, as well as the inclusion of children, justified in terms of the scientific goals and research strategy proposed? …

Important Writing Tips…

- The instructions require that materials be organized in a particular format. Reviewers are accustomed to finding information in specific sections of the application. Organize your application to effortlessly guide reviewers through it. This creates an efficient evaluation process and saves reviewers from hunting for required information.
- Think like a reviewer. A reviewer must often read 10 to 15 applications in great detail and form an opinion about each of them. Your application has a better chance at being successful, if it is easy to read and follows the usual format. Make a good impression by submitting a clear, well-written, properly organized application.
- Start with an outline following the suggested organization of the application.
- Be complete and include all pertinent information.
- Be organized and logical. The thought process of the application should be easy to follow. The parts of the application should fit together.
- Write one sentence summarizing the topic sentence of each main section. Do the same for each main point in the outline.
- Make one point in each paragraph. This is key for readability. Keep sentences to 20 words or less. Write simple, clear sentences….
- Be realistic. Don't propose more work than can be reasonably done during the proposed project period. Make sure that the personnel have appropriate scientific expertise and training. Make sure that the budget is reasonable and well-justified.
- Capture the reviewers' attention by making the case for why NIH should fund your research. Tell reviewers why testing your hypothesis is worth NIH's money, why you are the person to do it, and how your institution can give you the support you'll need to get it done. Be persuasive.
- Include enough background information to enable an intelligent reader to understand your proposed work. …
- Use the active, rather than passive, voice. For example, write "We will develop an experiment," not "An experiment will be developed."
- Use a clear and concise writing style so that a non-expert may understand the proposed research. Make your points as directly as possible. Use basic English, avoiding jargon or excessive language. Be consistent with terms, references and writing style.
- Spell out all acronyms on first reference.
- Use sub-headings, short paragraphs, and other techniques to make the application as easy to navigate as possible. Be specific and informative, and avoid redundancies.
- Use diagrams, figures and tables, and include appropriate legends, to assist the reviewers to understand complex information. These should complement the text and be appropriately inserted. Make sure the figures and labels are readable in the size they will appear in the application.
- Use bullets and numbered lists for effective organization. Indents and bold print add readability. Bolding highlights key concepts and allows reviewers to scan the pages and retrieve information quickly. Do not use headers or footers.
- Identify weak links in your application so the application you submit is solid, making a strong case for your project…

Proofreading and Final Edits

- Allow sufficient time to put the completed application aside, and then edit it from a fresh vantage point. Try proofreading by reading the application aloud. …
- Have zero tolerance for typographical errors, misspellings, grammatical mistakes or sloppy formatting. A sloppy or disorganized application may lead the reviewers to conclude that your research may be conducted in the same manner.
- Prior to submission, perform a final proofread of the entire grant application.