Rensselaer

Department of Biological Sciences

2023-2024
Graduate Student Handbook

Biochemistry & Biophysics Graduate Programs

Rensselaer Polytechnic Institute
Jonsson-Rowland Science Center, 1C19
Telephone: (518) 276-2808

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Departmental Contact Information

https://science.rpi.edu/biology

Biological Sciences Department Head
Susan Gilbert, Ph.D.
gilbes2@rpi.edu
CBIS 2237
(518) 276-4415

Biochemistry & Biophysics Graduate Program Director
Blanca Barquera, Ph.D.
barqub@rpi.edu
CBIS 2239
(518) 276-3861

Biochemistry & Biophysics Graduate Program Administrator
Dallas Dudley
dudled@rpi.edu
JRSC 1C19
(518) 276-2808

Biochemistry & Biophysics Graduate Program Committee
Blanca Barquera, barqub@rpi.edu - *Biological Sciences*
Scott Forth, forths@rpi.edu - *Biological Sciences*
Mattheos Koffas, koffam@rpi.edu - *Chemical and Biological Engineering*
Moussa Ngom, ngomm@rpi.edu - *Physics, Applied Physics & Astronomy*
Catherine Royer, royerc@rpi.edu - *Biological Sciences*

Office of Graduate Education
https://graduate.rpi.edu/
graduate@rpi.edu
1516 Peoples Ave. Troy, NY 12180
(518) 276-6488

Graduate Education in Biochemistry & Biophysics at Rensselaer: Overview

The Graduate Program in Biochemistry and Biophysics (BCBP) at Rensselaer is designed to help you to become an active participant in modern biochemical and biophysical research and to provide you with many opportunities to develop as a scientist.

The BCBP Program will help you obtain the tools necessary for a successful research or teaching career in the public or private sector. These include:

- A background in a variety of sub-disciplines within the broader field of biochemistry and/or biophysics.
- Critical thinking skills.
- The ability to plan, execute and interpret experiments, and experience in the necessary research techniques.
- Skills in analyzing scientific literature.
- Oral communication skills.
- Experience in scientific writing, including manuscript and grant proposal preparation.
- Apprenticeship in a variety of biochemical and biophysical methodologies.

Your graduate education will include:

- Course work, including a year-long Biology Core Course and three or more BCBP module elective courses covering the broad fields of modern biology, biochemistry, and biophysics. Depending on the needs and interests of individual students, other advanced graduate courses are available as electives. In addition to offerings at RPI, BCBP graduate students can enroll in courses at nearby institutions, including SUNY-Albany and Albany Medical College.
- Working closely with a research advisor who will serve as your scientific mentor.
- Practice in oral presentations through participation in departmental seminars. This is essential for learning to present your work at research conferences and seminars and will help you to become an effective communicator for research and education.
- Teaching experience. Many scientists choose careers that involve teaching, and our program provides this valuable experience.
- Opportunities to mentor undergraduates and/or junior graduate students.
- Opportunities for interdisciplinary collaborations.

We hope this will be a rewarding experience!

The Graduate Curriculum in Biochemistry & Biophysics

The PhD is a scholarly degree requiring an original research contribution to a scientific field. Thus, the time to degree completion is determined by the research itself and is influenced by both internal factors (e.g., student motivation and work ethic), and by external factors (e.g., standards in the research sub-discipline, luck with experiments). Although a student may reasonably expect to spend approximately five years completing the requirements for a PhD, there are many cases of both shorter and longer periods of study both at Rensselaer and across the disciplines of Biochemistry and Biophysics. A student wishing to register beyond the end of the fifth year must file a petition each semester with the Graduate Program Committee. If suitable progress is being made toward the degree, this petition is normally granted. The Institute sets a maximum time of seven years to degree completion for a PhD for students entering with a bachelor's degree. For students entering with a master's degree, the maximum time to degree completion for a PhD is five years.

Requirements for Advancement

First year students must:

- Achieve a grade of B or better in each semester of the Core Course.
- Achieve a grade of B or better in each semester of chosen BCBP modules.
- Successfully complete each semester of the Seminar course, including 6 Biology seminars and 4 external department seminars.
- Successfully complete a TA assignment *(RGF recipients will not TA until Year 2).*
- Successfully complete three research laboratory rotations, with oral presentations at the end of each.
- Successfully match with a thesis lab to begin PhD research.
- Meet with advisor to complete Doctoral Student Yearly Review.
- Submit a Plan of Study to Graduate Program Administrator and Office of Graduate Education.
- Maintain a minimum 3.0 overall GPA.

Second year students must:

- Maintain satisfactory research performance in the thesis lab.
- Achieve a grade of B or better in one chosen BCBP module (can be taken either semester).
- Successfully complete each semester of the Seminar course, including 6 Biology seminars and 4 external department seminars.
- Present a research seminar in department seminar series after passing Candidacy Exam.
- Form a doctoral thesis committee.
- Successfully pass the Candidacy Examination.
- Meet with advisor to complete Doctoral Student Yearly Review.
- Maintain and update Plan of Study as needed.
- Maintain a minimum 3.0 overall GPA.

Third year students (and each year after until graduation) must:

- Maintain satisfactory research performance in the thesis lab.
- Successfully complete each semester of the Seminar course, including 6 Biology seminars and 4 external department seminars.
- Present a research seminar in department seminar series.
- Convene a meeting of the doctoral committee, preferably immediately after presenting at the department seminar.
- Meet with advisor to complete Doctoral Student Yearly Review.
- Maintain and update Plan of Study as needed.
- Maintain a minimum 3.0 overall GPA.

To receive a PhD, a student must:

- Write a doctoral dissertation and prepare it with appropriate formatting and references (for guidance on this topic, see the Office of Graduate Education website).
- Present the dissertation research in a public seminar.
- Defend the dissertation in an oral examination before the doctoral committee.
- Publications: an essential aspect of research is publication of peer-reviewed research articles, and students are expected and encouraged to publish peer-reviewed journal articles. It is expected (although not absolutely required) that students will have at least one paper published or accepted for publication at the time of graduation.

Additional Information:

- Deviations from the typical course of study must be approved in advance by the Graduate Program Committee. Failure to receive prior approval may result in the loss of financial aid.
- Graduate School is a full-time job. Students funded by the Institute or an external Fellowship are strongly encouraged not to participate in external employment. In some cases, this may not be allowed by your funding source. Students must also consider maintaining satisfactory academic progress and time to degree as required by the Office of Graduate Education.

Key Points: Year 1

- **Courses**
  - **Biology Core Course:**
    To ensure that students have a broad foundation in the diverse areas of modern biological inquiry, students are required to take the two-semester Biology Core Course in their first year. The course is team-taught by the entire department faculty and introduces all areas of research performed in the department. In addition, students will receive professional development instruction in topics such as research ethics, scientific presentations, and career opportunities. Finally, students will receive instruction in scientific writing, which will culminate in a major written product each semester. The Core course serves as the Qualifying Exam for BCBP. Students must earn at least a B each semester to continue to the second year.

  - **BCBP Modules:**
    Students must enroll in one BCBP module course each semester in their first year, and one BCBP module course in their second year (in either the Fall or Spring semester). Students must earn at least a B each semester to continue to the second year. Approved BCBP Module courses are listed on Page 11 of the Graduate Program Handbook. Students may substitute one of the three total required modules with another course related to their research with the approval of the GPD. However, this is usually done in the second year once the students have joined a research group.

- **Seminar Attendance:**
  An important aspect of graduate education is learning about a wide range of scientific topics and learning to think critically about research in fields outside your own. All PhD students are required to attend weekly seminars. Students must attend at least six of the weekly Biology seminar series each semester, which includes presentations from outside speakers, RPI speakers, and senior graduate students. Additionally, BCBP students must attend at least four external seminars each semester on topics relevant to their discipline held in departments outside of the Department of Biological Sciences.

- **Teaching Requirements:**
  An essential part of each student's professional training is experience as a teaching assistant. BCBP PhD students are required to TA at least two semesters, typically in the first year, although many will TA for four semesters (typically during their first two years). *Students who receive a Rensselaer Graduate Fellowship will not be required to TA at all during their first year.* Note: as a teaching assistant, the graduate student is serving as an instructor for undergraduate students, and as such is expected to behave in a professional manner. All forms of harassment are prohibited.

- **Rotations and Choosing an Advisor:**

  Because the dissertation advisor will serve as the primary mentor for a student, the selection of the advisor is one of the most important decisions that a graduate student will make. With the guidance of the dissertation advisor, the student will develop critical thinking, independence, laboratory skills, and set goals for completion of the dissertation project. To enable students to choose the laboratory best suited for their individual needs, students are required to rotate in three different laboratories that are associated with the BCBP program during their first year and may not join a lab for their dissertation research until all three rotations have been completed. The rotation system allows both students and prospective advisors to judge if there is a good fit between them. Each rotation will last for approximately six weeks. At the end of each rotation, students will present a short talk on their rotation research to the department.

  If three rotations are not sufficient to select an advisor, the student, in consultation with GPC, may be allowed a fourth rotation laboratory. Requests for exemptions to the "three rotations" rule will be considered by the GPC on a case-by-case basis. The student must join a lab by the end of the first year in order to progress to the second year.

Key Points: Year 2 and Beyond

- **Courses**
  - **BCBP Modules:**
    Students must enroll in one BCBP module course in their second year (during either the Fall or Spring semester). Students must earn at least a B. Approved BCBP Module courses are listed on Page 11 of the Graduate Program Handbook. Students may substitute one of the three total required modules with another course related to their research with the approval of the GPD. This is usually done in the second year once the students have joined a research group. Students whose needs are not met by more conventional departmental elective offerings can enroll in directed reading courses with their thesis advisors or other faculty members.

  - **Other Credits:**
    The Institute requires a total of seventy-two credits for the PhD. After the first year, most of these will come from Dissertation Research credits. Courses are generally only taken during the first two years while students are beginning their research. This allows students to focus on their dissertation research in subsequent years.

- **Seminar Series and Graduate Student Seminar:**
  Students are required to register for, and successfully complete the requirements of the Seminar Course each semester they are a graduate student. After passing the Candidacy Exam before the end of their second year, each student is required to present a research seminar annually. From the third year on, it is advisable that these seminar presentations are coordinated with the annual meeting of the student's Doctoral Thesis Committee (see below). It is preferable, although not always possible, to schedule the Committee meeting immediately after the seminar.

- **Doctoral Thesis Committee:**
  The Doctoral Thesis Committee will consist of at least four members: the advisor (who chairs the committee, except for during the Candidacy Exam, see below), two members of the department and one external member (from outside of the department and/or the Institute). If the external member is outside RPI, a CV and letter of justification must be submitted to the GPC (and then subsequently to the Office of Graduate Education) and the appointment to the committee must be approved. *The graduate student selects the thesis committee in consultation with the faculty advisor during the spring of their second year, before scheduling the Candidacy Exam.* The thesis committee is responsible for supervising the student's academic studies and monitoring the student's progress towards the degree. The thesis committee also oversees the student's Candidacy Examination (although for the Candidacy, a committee member other than the advisor must serve as the chair). Once the committee is selected, the GPC and OGE must approve any changes in its composition.

  After passing their Candidacy Exam, students must convene at least one thesis committee meeting per year – generally in coordination with the student's presentation in the seminar series. A week

before each committee meeting, the student must provide the committee members with a 2-page written progress report, consisting of background (brief), specific aims or project goals, results since the last committee meeting, and future plans. The Record of Annual Thesis Committee Meeting form must be signed by all members of the thesis committee indicating satisfactory progress and filed with the Graduate Program Administrator.

- **Candidacy Examination:**

The candidacy exam is designed to evaluate the student's ability to perform independent scientific research, and to present and analyze data at an appropriate level for a doctoral student. The exam must take place by the end of the second year (the final day of the Spring semester), and passing this exam is mandatory for continuation in the Ph.D. program.

The candidacy exam is a thesis proposal, and therefore should be based on the student's research. The exam consists of three parts – a written document, an oral presentation, and an oral defense. The written document should be in the style of a grant proposal (e.g., NIH or NSF, see Appendix 1 and 2 for guidelines).

Written Proposal Requirements:

- ✓ Page limit: 10 (not including references or biographical sketch)
- ✓ Single spaced
- ✓ 1-inch margins on all sides
- ✓ Arial regular, 11 point
- ✓ References should follow a standard format (chosen in consultation with the advisor – typical formats include those of common scientific journals)
- ✓ 2-page biographical sketch - should follow current NIH or NSF format requirements

The oral presentation should be 30-40 minutes, followed directly by the defense of the research plan to the candidacy examination committee.

The purpose of the candidacy examination is to test how prepared a student is to advance in their graduate training. Thus, the research plan can be and should be developed in consultation between the student and advisor, but the actual *written proposal and candidacy presentation must be prepared by the student alone.* Students can and should get feedback from others (e.g., lab group members and other graduate students) on their ideas as they develop their proposal and draft presentation slides, but the work must be exclusively that of the student alone.

The doctoral thesis committee serves as the candidacy examination committee, but a member of the committee other than the thesis advisor serves as the committee chair. The student's advisor is present during the examination but does not ask questions, and the student must answer the questions alone (unless clarification is needed). This is in part to avoid the potential of bias in whether a student passes the exam, but also to ensure that the student can defend the proposal alone.

The student must give the written candidacy proposal to the members of their committee at least 2 weeks prior to the candidacy examination. If the student does not meet this deadline, or if the student's work (written and/or oral) is inadequate, the committee will decide whether the student should be allowed to retake the exam by a specified date or be asked to leave the program. A thorough evaluation of the student by the advisor is essential for this decision.

Approved Biochemistry & Biophysics Module Courses

Offered Fall Semester

BCBP-6870 Protein Structure Determination
BCBP-6800 Methods in Biophysics

Offered Spring Semester

BCBP-6310 Genetic Engineering
BCBP-6420 Molecular Modeling
BCBP-6650 The Biology of Systems

Note: Semester course offerings may occasionally change due to faculty sabbaticals or other extenuating circumstances. Please always check the class hours schedule before registering.

Requirements for Graduation

All graduate forms and documents required during your time in the Biochemistry & Biophysics Ph.D. program can be found at the following website: https://graduate.rpi.edu/forms-and-policies

The items listed below should be completed by the beginning of the semester you intend to graduate:

- Registration for the semester in which the degree will be conferred is required.
- A Degree Application Form (on SIS) must be on file with the Registrar's Office – refer to the academic calendar for due dates applicable to the semester you intend to graduate.

Part I: Prior to submission of the dissertation, the items below must already be on file in the Office of Graduate Education.

- An approved Plan of Study must be on file with the Registrar's Office and a copy on file with the Office of Graduate Education (courses listed on the Plan of Study must agree with courses shown on your transcript).
- An approved Doctoral Committee Nomination Form must be on file with the Office of Graduate Education.
- A record of successful completion of the Candidacy Examination must be on file with the Office of Graduate Education.

Part II: The items listed below must be submitted to the Office of Graduate Education before a formal review of the dissertation will be conducted. In order to complete the review process and notify the Registrar's Office that your dissertation requirement has been met, it is highly recommended that your submission is completed before the dissertation submission deadline (but no later than the published deadline).

- A Record of Dissertation Exam Form with the original signatures of your Examining Committee must be provided to the Office of Graduate Education. Once your dissertation has been reviewed and officially approved, this form is signed by the Dean of Graduate Education and sent to the Registrar's Office.
- A completed Survey of Earned Doctorates form must be submitted with the dissertation.
- A completed Graduate Student Exit Survey form when you submit your dissertation.
- While not required for dissertation submission, we ask that you please take a moment to complete the Future Plans Survey located at the Center for Career and Professional Development website. We have many employers who request compensation guidelines for PhD graduates, this data can help strengthen salary offers for our students.

Typical Course of Study for Biochemistry & Biophysics PhD Students

Academic load: To be considered full time you must carry 9 credit hours per semester at minimum. *Exception: If you are funded on a Fellowship, you must carry 12 credits hours at minimum for full-time status.*

Year One

1st Semester	
ADMN 6700: Orientation Seminar for Grads	0 credits
ADMN 6800: TA Training Seminar*	0 credits
BIOL 6510: Biology Core Course I	4 credits
BIOL 6900: Seminar in Biology	1 credit
BCBP 6910: Research Rotation	4 credits
BCBP 6XXX: BCBP Module	4 credits
TOTAL	*13 credits*

2nd Semester	
BIOL 6520: Biology Core Course II	4 credits
BIOL 6900: Seminar in Biology	1 credit
BCBP 6910: Research Rotation	4 credits
BCBP 6XXX: BCBP Module	4 credits
TOTAL	*13 credits*

Year Two

3rd Semester	
BCBP 6XXX: BCBP Module *(Fall OR Spring)*	4 credits
BCBP 9990: Dissertation	4+ credits
BIOL 6900: Seminar in Biology	1 credit
TOTAL	*9+ credits*

4th Semester	
BCBP 6XXX: BCBP Module *(Fall OR Spring)*	4 credits
BCBP 9990: Dissertation	4+ credits
BIOL 6900: Seminar in Biology	1 credit
TOTAL	*9+ credits*

Year Three

5th Semester	
BCBP 9990: Dissertation	8+ credits
BIOL 6900: Seminar in Biology	1 credit
TOTAL	*9+ credits*

6th Semester	
BCBP 9990: Dissertation	8+ credits
BIOL 6900: Seminar in Biology	1 credit
TOTAL	*9+ credits*

Year Four

7th Semester	
BCBP 9990: Dissertation	8+ credits
BIOL 6900: Seminar in Biology	1 credit
TOTAL	*9+ credits*

8th Semester	
BCBP 9990: Dissertation	8+ credits
BIOL 6900: Seminar in Biology	1 credit
TOTAL	*9+ credits*

Year Five

9th Semester	
BCBP 9990: Dissertation	8+ credits
BIOL 6900: Seminar in Biology	1 credit
TOTAL	*9+ credits*

10th Semester	
BCBP 9990: Dissertation	8+ credits
BIOL 6900: Seminar in Biology	1 credit
TOTAL	*9+ credits*

*** Note:** Rensselaer Graduate Fellowship students should not register for *ADMN 6800: TA Training Seminar* in the 1st semester because they will not have a TA assignment in Year One. Instead, RGF recipients should register for *ADMN 6800: TA Training Seminar* for the semester of their first TA assignment. Typically, this will be in Year 2 (3rd Semester).

Requirements for an M.S. In Biochemistry & Biophysics

Applies to both co-terminal and regular M.S. degrees.

The master's degree in BCBP consists of 30 credits. Students can pursue either (A) a thesis-based master's or (B) a course-based master's with a Professional Project with the following requirements:

A. Thesis-based Master's degree

- 4-9 Credit MS thesis required [2, 5]
- 21-26 Credits of Coursework [1-4]
- TOTAL: 30 Credits [1-4]

B. Professional Project-based Master's degree

- 4-9 Credit MS Professional project required [2, 6]
- 21-26 Credits of Coursework [1-4]
- TOTAL: 30 Credits [1-4]

Notes:

1. Students cannot repeat a course at the graduate level that was already taken at undergraduate level.
2. Of the 30 credits, 15 or more (including the Professional Project or thesis) must be at the 6000 level, with the rest at 4000 or above.
3. Of the 30 credits, 15 or more must have the BIOL, BCBP, CHEM, or PHYS prefix.
4. Of the 30 credits, 8 or more must come from BCBP modules.
5. The MS thesis is typically a laboratory research project undertaken with a faculty mentor. An MS thesis must be approved by an MS thesis committee and must be submitted to the Office of Graduate Education for binding.
6. A professional project consists of a written document such as a report of research outcomes, a review of relevant literature or a proposal for future work and should be approved by the BCBP graduate program director.

Appendix 1: NSF Style Proposal Format (adapted from NSF guidelines)

The proposal should present the (1) objectives and scientific significance of the proposed work; (2) the methods to be employed; and (3) encompasses the potential to advance knowledge and the potential to benefit society and contribute to the achievement of specific, desired societal outcomes. It should present the merits of the proposed project clearly and should be prepared with the care and thoroughness of a paper submitted for publication.

The sections described below represent the body of a proposal submitted to NSF. A full proposal must contain the following sections:

- Project Summary (1 p)
- Project Description (10 pp)
- References Cited
- Biographical Sketch (2 pp)

Project Summary

Each proposal must contain a summary of the proposed project not more than one page in length. The Project Summary consists of an overview, a statement on the intellectual merit of the proposed activity, and a statement on the broader impacts of the proposed activity.

The overview includes a description of the activity that would result if the proposal were funded and a statement of objectives and methods to be employed. The statement on intellectual merit should describe the potential of the proposed activity to advance knowledge. The statement on broader impacts should describe the potential of the proposed activity to benefit society and contribute to the achievement of specific, desired societal outcomes.

The Project Summary should be written in the third person, informative to other persons working in the same or related fields, and, insofar as possible, understandable to a scientifically or technically literate lay reader. It should not be an abstract of the proposal.

Project Description

The Project Description should provide a clear statement of the work to be undertaken and must include objectives for the period of the proposed work and expected significance, relation to longer-term goals of the PI's project, and relation to the present state of knowledge in the field.

The Project Description should outline the general plan of work, including the broad design of activities to be undertaken, and, where appropriate, provide a clear description of experimental methods and procedures. These sections should include 1) Introduction, 2) Objectives, 3) Methods, 4) Planned analyses, 5) Feasibility, 6) Intellectual Merit, and 7) Broader Impacts. Proposers should address what they want to do, why they want to do it, how they plan to do it, how they will know if they succeed, and what benefits could accrue if the project is successful. The project activities may be based on previously established and/or innovative methods and approaches, but in either case must

be well justified. These issues apply to both the technical aspects of the proposal and the way in which the project may make broader contributions.

The Project Description must contain, as a separate section within the narrative, a discussion of the broader impacts of the proposed activities. Broader impacts may be accomplished through the research itself, through the activities that are directly related to specific research projects, or through activities that are supported by, but are complementary to the project. NSF values the advancement of scientific knowledge and activities that contribute to the achievement of societally relevant outcomes. Such outcomes include, but are not limited to: full participation of women, persons with disabilities, and underrepresented minorities in science, technology, engineering, and mathematics (STEM); improved STEM education and educator development at any level; increased public scientific literacy and public engagement with science and technology; improved well-being of individuals in society; development of a diverse, globally competitive STEM workforce; increased partnerships between academia, industry, and others; improved national security; increased economic competitiveness of the United States; and enhanced infrastructure for research and education.

References Cited

Reference information is required. Each reference must include the names of all authors (in the same sequence in which they appear in the publication), the article and journal title, book title, volume number, page numbers, and year of publication. If the document is available electronically, the website address also should be identified. Proposers must be especially careful to follow accepted scholarly practices in providing citations for source materials relied upon when preparing any section of the proposal.

Biographical Sketch

A biographical sketch (limited to two pages) is required. The following information must be provided in the order and format specified below.

1. Professional Preparation

   A list of the individual's undergraduate and graduate education.

2. Products

   A list of: (i) up to five products most closely related to the proposed project; and (ii) up to five other significant products, whether or not related to the proposed project. Acceptable products must be citable and accessible including but not limited to publications, data sets, software, patents, and copyrights. Unacceptable products are unpublished documents not yet submitted for publication, invited lectures, and additional lists of products. Only the list of 10 will be used in the review of the proposal.

Each product must include full citation information including (where applicable and practicable) names of all authors, date of publication or release, title, title of enclosing work such as journal or book, volume, issue, pages, website, and Uniform Resource Locator (URL) or other Persistent Identifier.

3. Synergistic Activities

A list of up to five examples that demonstrate the broader impact of the individual's professional and scholarly activities that focuses on the integration and transfer of knowledge as well as its creation. Examples could include, among others: innovations in teaching and training (e.g., development of curricular materials and pedagogical methods); contributions to the science of learning; development and/or refinement of research tools; computation methodologies, and algorithms for problem-solving; development of databases to support research and education; broadening the participation of groups underrepresented in science, mathematics, engineering, and technology; and service to the scientific and engineering community outside of the individual's immediate organization.

Appendix 2: NIH Style Proposal Format (adapted from NIH guidelines)

Your application should represent a sound approach to the investigation of an important biomedical research, behavioral research, technological, engineering, or scientific question, and be worthy of support under the stated criteria of the FOA. It should be self-contained and written with the care and thoroughness accorded to papers for publication.

The sections described below represent the body of a proposal submitted to NIH. A full proposal must contain the following sections:

- Specific Aims (1 p)
- Research Strategy (10 pp)
- Bibliography and References Cited
- Biographical Sketch (2 pp)

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 have 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

Start each section with the appropriate heading – Significance, Innovation, Approach.

1. Significance

    Explain the importance of the problem or critical barrier to progress that the proposed project addresses. Describe the scientific premise for the proposed project, including consideration of the strengths and weaknesses of published research or preliminary data crucial to the support of your application. Explain how the proposed project will improve scientific knowledge, technical capability, and/or clinical practice in one or more broad fields.

2. Innovation

    Explain how the application challenges and seeks to shift 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.

3. Approach

Describe the overall strategy, methodology, and analyses to be used to accomplish the specific aims of the project. Describe the experimental design and methods proposed and how they will achieve robust and unbiased results. Include how the data will be collected, analyzed, and interpreted. 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. Also, discuss the applicant's preliminary studies and data pertinent to this application.

Bibliography and References Cited

The references should be limited to relevant and current literature. While there is not a page limitation, it is important to be concise and to select only those literature references pertinent to the proposed research.

Biographical Sketch

A biographical sketch (limited to two pages) is required. See following pages for an example – as a graduate student, much of the information is not relevant, but fill it in as thoroughly as you can.

BIOGRAPHICAL SKETCH
DO NOT EXCEED TWO PAGES

NAME: Hunt, Morgan Casey

POSITION TITLE: Associate Professor of Psychology

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Completion Date MM/YYYY	FIELD OF STUDY
University of California, Berkeley	B.S.	05/1990	Psychology
University of Vermont	M.S.	05/1996	Experimental Psychology

A. Personal Statement

I have the expertise, leadership, training, expertise, and motivation necessary to successfully carry out the proposed research project. I have a broad background in psychology, with specific training and expertise in ethnographic and survey research and secondary data analysis on psychological aspects of drug addiction. My research includes neuropsychological changes associated with addiction. As PI or co-Investigator on several university- and NIH-funded grants, I laid the groundwork for the proposed research by developing effective measures of disability, depression, and other psychosocial factors relevant to the aging substance abuser, and by establishing strong ties with community providers that will make it possible to recruit and track participants over time as documented in the following publications. In addition, I successfully administered the projects (e.g., staffing, research protections, budget), collaborated with other researchers, and produced several peer-reviewed publications from each project. As a result of these previous experiences, I am aware of the importance of frequent communication among project members and of constructing a realistic research plan, timeline, and budget. The current application builds logically on my prior work. During 2005-2006 my career was disrupted due to family obligations. However, upon returning to the field I immediately resumed my research projects and collaborations and successfully competed for NIH support.

1. Merryle, R.J. & Hunt, M.C. (2004). Independent living, physical disability, and substance abuse among the elderly. Psychology and Aging, 23(4), 10-22.
2. Hunt, M.C., Jensen, J.L. & Crenshaw, W. (2007). Substance abuse and mental health among community-dwelling elderly. International Journal of Geriatric Psychiatry, 24(9), 1124-1135.
3. Hunt, M.C., Wiechelt, S.A. & Merryle, R. (2008). Predicting the substance-abuse treatment needs of an aging population. American Journal of Public Health, 45(2), 236-245. PMCID: PMC9162292 Hunt, M.C., Newlin, D.B. & Fishbein, D. (2009). Brain imaging in methamphetamine abusers across the lifespan. Gerontology, 46(3), 122-145.

B. Positions and Honors

Positions and Employment

1998-2000	Fellow, Division of Intramural Research, National Institute of Drug Abuse, Bethesda, MD
2000-2002	Lecturer, Department of Psychology, Middlebury College, Middlebury, VT
2001-	Consultant, Coastal Psychological Services, San Francisco, CA
2002-2005	Assistant Professor, Department of Psychology, Washington University, St. Louis, MO
2007-	Associate Professor, Department of Psychology, Washington University, St. Louis, MO

Other Experience and Professional Memberships

1995-	Member, American Psychological Association
1998-	Member, Gerontological Society of America
1998-	Member, American Geriatrics Society
2000-	Associate Editor, Psychology and Aging
2003-	Board of Advisors, Senior Services of Eastern Missouri
2003-05	NIH Peer Review Committee: Psychobiology of Aging, ad hoc reviewer
2007-11	NIH Risk, Adult Addictions Study Section, members

Honors

2003	Outstanding Young Faculty Award, Washington University, St. Louis, MO
2004	Excellence in Teaching, Washington University, St. Louis, MO
2009	Award for Best in Interdisciplinary Ethnography, International Ethnographic Society

C. Contribution to Science

1. My early publications directly addressed the fact that substance abuse is often overlooked in older adults. However, because many older adults were raised during an era of increased drug and alcohol use, there are reasons to believe that this will become an increasing issue as the population ages. These publications found that older adults appear in a variety of primary care settings or seek mental health providers to deal with emerging addiction problems. These publications document this emerging problem but guide primary care providers and geriatric mental health providers to recognize symptoms, assess the nature of the problem and apply the necessary interventions. By providing evidence and simple clinical approaches, this body of work has changed the standards of care for addicted older adults and will continue to provide assistance in relevant medical settings well into the future. I served as the primary investigator or co-investigator in all of these studies.
    a. Gryczynski, J., Shaft, B.M., Merryle, R., & Hunt, M.C. (2002). Community based participatory research with late-life addicts. American Journal of Alcohol and Drug Abuse, 15(3), 222-238.
    b. Shaft, B.M., Hunt, M.C., Merryle, R., & Venturi, R. (2003). Policy implications of genetic transmission of alcohol and drug abuse in female nonusers. International Journal of Drug Policy, 30(5), 46-58.
    c. Hunt, M.C., Marks, A.E., Shaft, B.M., Merryle, R., & Jensen, J.L. (2004). Early-life family and community characteristics and late-life substance abuse. Journal of Applied Gerontology, 28(2),26-37.
    d. Hunt, M.C., Marks, A.E., Venturi, R., Crenshaw, W. & Ratonian, A. (2007). Community-based intervention strategies for reducing alcohol and drug abuse in the elderly. Addiction, 104(9), 1436-1606. PMCID: PMC9000292

2. In addition to the contributions described above, with a team of collaborators, I directly documented the effectiveness of various intervention models for older substance abusers and demonstrated the importance of social support networks. These studies emphasized contextual factors in the etiology and maintenance of addictive disorders and the disruptive potential of networks in substance abuse treatment. This body of work also discusses the prevalence of alcohol, amphetamine, and opioid abuse in older adults and how networking approaches can be used to mitigate the effects of these disorders.
    a. Hunt, M.C., Merryle, R. & Jensen, J.L. (2005). The effect of social support networks on morbidity among elderly substance abusers. Journal of the American Geriatrics Society, 57(4), 15-23.
    b. Hunt, M.C., Pour, B., Marks, A.E., Merryle, R. & Jensen, J.L. (2005). Aging out of methadone treatment. American Journal of Alcohol and Drug Abuse, 15(6), 134-149.
    c. Merryle, R. & Hunt, M.C. (2007). Randomized clinical trial of cotinine in older nicotine addicts. Age and Ageing, 38(2), 9-23. PMCID: PMC9002364

3. Methadone maintenance has been used to treat narcotics addicts for many years, but I led research that has shown that over the long-term, those in methadone treatment view themselves negatively and they gradually begin to view treatment as an intrusion into normal life. Elderly narcotics users were shown in

carefully constructed ethnographic studies to be especially responsive to tailored social support networks that allow them to eventually reduce their maintenance doses and move into other forms of therapy. These studies also demonstrate the policy and commercial implications associated with these findings.

a. Hunt, M.C. & Jensen, J.L. (2003). Morbidity among elderly substance abusers. Journal of the Geriatrics, 60(4), 45-61.
b. Hunt, M.C. & Pour, B. (2004). Methadone treatment and personal assessment. Journal Drug Abuse, 45(5), 15-26.
c. Merryle, R. & Hunt, M.C. (2005). The use of various nicotine delivery systems by older nicotine addicts. Journal of Ageing, 54(1), 24-41. PMCID: PMC9112304
d. Hunt, M.C., Jensen, J.L. & Merryle, R. (2008). The aging addict: ethnographic profiles of the elderly drug user. NY, NY: W. W. Norton & Company.

Complete List of Published Work in MyBibliography:
http://www.ncbi.nlm.nih.gov/sites/myncbi/collections/public/1PgT7IEFIAJBtGMRDdWFmjWAO/?sort=date&direction=ascending

D. Additional Information: Research Support and/or Scholastic Performance