

## Department of Psychology and Neuroscience Graduate Training Program in Behavioral, Psychiatric and Statistical Genetics (BPSG)

Revised February 24, 2022  
Program Director, BPSG

The BPSG area focusses on the study of genetic and environmental influences on behavior. We apply principles and techniques from developmental genetics, evolutionary genetics, molecular genetics, and quantitative genetics to the analysis of behavior. BPSG faculty and trainees use these tools to better understand such diverse areas as aging, substance abuse, cognitive development, learning disabilities, neurological diseases, personality, and psychopathology.

Students in the graduate training program are expected to achieve expertise in genetics relevant to their special research interests. Within the BPSG graduate training program, students can arrange a course of studies that incorporates elements of the other training programs in the Department of Psychology & Neuroscience (P&N) and other academic units within the University (e.g., the Departments of EE BIO, MCDB, and IPHY), as detailed below.

### **Purpose of this document:**

This document is a synthesis of the BPSG requirements for obtaining a Master's degree and a PhD. A related set of requirements exists for those pursuing the Institute for Behavioral Genetics (IBG) Interdisciplinary Certificate in Behavioral Genetics (hereafter, "IBG certificate"). The IBG certificate applies to graduate students in other programs and other departments as well. Virtually all BPSG students also obtain the IBG certificate because the IBG certificate requirements are a subset of the BPSG requirements, but it is not required to do so. Because we keep course offerings updated on the IBG certificate checklist, students should refer to that document (linked below) for updated course offerings related to BPSG requirements.

### **Links:**

The IBG Certificate checklist (where the updated course list is maintained):

<https://www.colorado.edu/ibg/prospective-students>

or "ibg certificate checklist" in a search engine.

The full Interdisciplinary Certificate in Behavioral Genetics requirements:

<https://www.colorado.edu/ibg/prospective-students>

or "ibg certificate" in a search engine.

Students are responsible for compliance with the rules of the Graduate School:

[https://www.colorado.edu/graduateschool/sites/default/files/attached-files/graduate\\_school\\_rules\\_6.9.18.pdf](https://www.colorado.edu/graduateschool/sites/default/files/attached-files/graduate_school_rules_6.9.18.pdf)

or "graduate school rules CU" in a search engine.

Students are also responsible for compliance with the graduate student rules in P&N:

<https://www.colorado.edu/psych-neuro/sites/default/files/attached-files/departmental-graduate-student-rules.pdf>

or “CU psychology and neuroscience graduate student rules” in a search engine.

A&S rules, specifications and deadlines for the dissertation:

<https://www.colorado.edu/graduateschool/thesis-and-dissertation-specifications>

or "CU graduate school dissertation specifications" in a search engine.

Note: Should there be any unintentional discrepancies between the rules laid out in this document and those from the Graduate School or the Department of P&N, the latter sets of rules take precedence (please let the BPSG program director know if you find any). Unless otherwise specified, the word “semester” in this document refers to the Fall or Spring semester. It does not refer to Maymester, Summer Session or Augmester.

### **Advisor**

On being admitted, students will be assigned a BPSG area advisor to supervise their training program leading to advanced degrees. If a change of interests or circumstances necessitates a change of advisor, students should obtain written consent from the faculty member with whom they wish to work and the approval of the Director of the BPSG training program. Each semester of their graduate career, students will be required to engage in research under the supervision of a faculty member. Usually, this faculty member is the student’s advisor, but it may also include other faculty.

### **Funding**

Almost all first-year graduate students receive academic year (September – May) funding through being a Teaching Assistant (TA), and it is required of our program to have at least one semester of teaching experience. After this, students may receive funding by a) continuing to TA; b) receiving a slot on one of IBG’s two NIH training grants, which fund around 8 IBG (not just BPSG) students per year; c) receiving extramural funding such as an NIH F32 or an NSF fellowship; or d) being funded as a graduate research assistant (GRA) on their advisor’s grant if available. Note that the amount of funding may differ between these mechanisms. Summer funding is also available through these same mechanisms. Students who are funded on the NIH training grants will receive summer funding. Historically, to create greater equity, IBG has funded students who do not have summer funding through other mean. The ability for IBG to continue to do this depends on finances and is not guaranteed.

The NIH training grant slots are competitive and when more applicants than slots are available (the usual case), the IBG training committee will give preference to students who have demonstrated the highest levels of research productivity, e.g., by publishing high quality papers. The training committee also gives weight to how well students’ research fits with the goals of the funding agencies (substance use/abuse for NIDA and mental health/disorders for NIMH). Remaining on the training grants also depends on student productivity; students not demonstrating adequate research productivity will be removed from the training grant. Students who are not US citizens or permanent residents are unfortunately ineligible for being funded on the NIH training grants, per NIH rules.

**Advisory Committee**

Student and advisor should establish an advisory committee consisting of the advisor and two faculty in BPSG. If the student is also working closely with, or is co-advised by, a non-BPSG faculty member, that member may substitute for one of the two BPSG members. This committee almost always makes up 3 (of the 5) members of the student's comps, Master's defense, and PhD defense committees (see next section). At the end of the second semester and each year thereafter, the advisory committee should meet to review progress and plan for the forthcoming year. The advisory committee will recommend to the BPSG area and the Department one of the following courses of action: continuation, continuation with conditions, or termination. The advisor should then provide a written review to the Graduate Program Assistant in P&N and to the appropriate staff member at IBG.

**Master's degree requirements**

BPSG graduate students are expected to complete the PhD. Nevertheless, it is possible for students to complete a Master's Degree on the way to completing the PhD, and in some cases students might elect to complete a terminal Master's degree. The guidelines for the Master's degree are provided below.

**Coursework requirements for a Master's degree**

BPSG students must complete the first four (or five for students starting after Fall 2021) courses that are required for the IBG certificate program (under section A in the certificate checklist). In total, BPSG students must complete 24 semester hours of graduate-level (5000+) coursework plus six hours of Master's thesis hour for the Master's degree, for a total of 30 hours of credit. Typically, students fill their remaining ~9-12 hours that are "electives" for the Master's degree with courses that are required for obtaining a PhD (see below). To count towards their degree, students must receive a grade of B- or better in these courses.

A maximum of 9 semester hours may be transferred from prior graduate work to the graduate program in the Department of P&N, subject to the approval of the BPSG Director and Associate Chair/Director of Graduate Education. Credit may not be transferred until the student has completed, at the CU Boulder Graduate School, at least six credits of graduate level coursework as a degree-seeking student on the CU Boulder campus with a 3.0 GPA. Transferred credits do not reduce the residence requirement but may reduce the amount of work to be done in formal courses. Transfer credit applications must be received by the final day of the second semester of study at CU Boulder

**Presentation requirements for a Master's degree**

Students must present at least once at the IBG journal club, each Fall semester at the IBG orientation poster session, and at the IBG mini conference at the end of each Spring semester. Students are also expected to attend and participate in all IBG journal clubs unless there is a scheduling conflict.

**Comps, Master's, and PhD defense Committees**

Students need to identify five faculty members for their PhD comps exam/Master's defense committee and for their later PhD defense committee. Typically, these are the same five individuals. These committees should consist of: (a) the advisor; (b) two members of BPSG (typically on the advisory committee); (c) one outside-of-BPSG P&N member (d) one non-P&N member. Note that faculty members with a secondary affiliation in the BPSG program can serve as the "outside-of-BPSG P&N" member of the committee.

For students who do not wish to combine their PhD comps exam with their Master's comps exam (e.g., for students who wish to obtain a terminal Master's degree), the Master's defense committee may be made up of three faculty members: (a) the advisor; (b) one member of BPSG; and (c) one individual who is in BPSG, is an outside-of-BPSG P&N member, or is a non-P&N member. At the discretion of the advisor, this committee may also include up to five members, in which case the composition will be as described in the paragraph above for combined PhD/Master's comps exams.

**Master's thesis requirement**

The student must submit and defend to the Master's committee either (1) a suitable graduate fellowship application such as an F31 that has been submitted to the relevant funding agency or (2) one first-authored paper of publishable quality. "Publishable quality" means that the paper is either published/accepted at a peer reviewed journal, under review, or in a state that the committee agrees could be submitted for publication. If their paper has not been published or submitted, the student should discuss with their advisor well before the Master's defense whether their paper is of publishable quality. Typically, all analyses have been completed and several rounds of edits between the mentor and the student have occurred before a paper can be deemed "publishable."

**Comprehensive Exam (Comps) & Master's defense**

Technically, there is a comps exam for obtaining a Master's degree as well as a separate PhD comps exam for being able to proceed on to a PhD. For students continuing on to receive a PhD, the "two" exams have traditionally been combined into a single "comps" exam. Thus, regardless of whether students will end their graduate training with a Master's degree or a PhD, they will need to take a comps exam. Furthermore, the defense of the Master's thesis is typically scheduled at the same time as the oral portion of the comps exam.

In the fourth or fifth semester (and sometimes the sixth, though this is frowned upon), students should schedule their combined comps/Master's defense with their comps/Master's defense committee members. Two important A&S rules: 1) students must be registered for credits the semester (including summer sessions) in which the Master's defense is scheduled; 2) notice of the exam should be filed with P&N 2+ months before the exam day - they need to provide this to the Grad School 2+ weeks before the exam day.

The written portion of the comps exam consists of 2 questions from each comps committee member and the student answers 5. At least one question from each committee member should

be answered. What is asked and the format (open or closed book, when the questions are provided to the student) is up to each committee member. Questions are typically provided to the student the morning of the exam and returned to the student's advisor (also the chair of the committee) later that same day (exact time to be decided by the advisor). Roughly a week after the written answers are returned to the committee members, the student and comps committee should meet in order a) for faculty to ask follow-up questions and to get clarity on the student's comps responses (the oral portion of the comps exam), and b) to hear a presentation from the student on their Master's project, giving faculty an opportunity to ask follow-up questions about their Master's thesis (the Master's defense). When students are pursuing a PhD, it is recommended that this presentation include a section about future dissertation research plans; this gives the PhD committee input into the early stages of the planned dissertation research.

At the committee's discretion, students who do not receive a majority vote from the comps committee may attempt to retake the exam after a period determined by the committee. Finally, note that there is some paperwork that students need to complete--talk to the relevant person in the P&N main office.

## **PhD requirements**

### **PhD Coursework**

Students are considered "PhD candidates" after successful completion of the Master's defense and after passing their comps exam. The Graduate School mandates completion of the PhD within six years (total, including time to the Master's degree). Students failing to meet this deadline need to receive an approved extension from the Graduate School.

In addition to the courses required for the Master's degree (which students must already have completed in order to obtain candidacy) additional courses must be completed before students can graduate with a PhD. These required courses may be taken at any time during graduate school, although students typically choose to take most of them before obtaining their Master's degree. The course requirements are the same as those needed to obtain the IBG certificate, except that BPSG students must take 3 (instead of 2) courses from those listed under section B courses and must take 2 (instead of 1) seminar courses from those listed under section C courses (see the IBG certificate requirements document). Students may petition their advisory committee and the IBG Training Committee to substitute another course for a required course. Students should check the IBG certificate for updated course requirements. Please note that students on the NIMH or NIDA training grants have additional requirements; see the IBG certificate for more information.

In addition to the course requirements described above, students must complete at least 30 credit hours of PSYC 8991 – Doctoral Thesis Research (max of 10 hours per semester). Students must be continuously registered as full-time students for a minimum of 5 dissertation hours in the fall and spring semesters each year, starting with the semester following the passing of the comps exam and extending through the semester in which the dissertation is successfully defended (requirement of the grad school).

**Presentation requirements for a PhD**

Students are expected to attend and participate in all IBG journal clubs unless there is a scheduling conflict. Students must present a total of three times at the IBG journal club, typically one before candidacy and two after. At least one of these presentations should be a formal talk about the students' research. Students must also present a poster each fall at the IBG orientation session and give an oral presentation at the IBG mini conference at the end of each Spring semester. Students are no longer required to give an exit colloquium after their PhD defense.

**Dissertation Proposal**

About one year before their planned dissertation defense, students should submit a written doctoral research proposal to their doctoral committee. A few weeks later, the committee should meet with the student to evaluate and provide feedback on the proposal.

**Dissertation & Dissertation Defense**

The format of the dissertation is up to the dissertation committee, but one typical format is five chapters, the middle three of which are a compilation of three published or publishable first-authored papers (which can include the two used for the Master's), along with an Introduction chapter and a Conclusion chapter. There are a number of (somewhat annoying) specifications and deadlines for the dissertation that need to be followed to comply with A&S rules; see here: <https://www.colorado.edu/graduateschool/thesis-and-dissertation-specifications> or type in "CU graduate school dissertation specifications" into a search engine.

Student should provide their written dissertation to the doctoral committee several weeks before the scheduled defense. At the defense, the student will present an overview of the dissertation and defend the dissertation before the doctoral committee. At the discretion of the student and the committee, other interested parties may be invited to the defense. The committee will deliberate in executive session to make recommendations on pass, fail, or in need of revisions.