

Formalization of PharmD/PhD Program for UCSD Graduate Council

MISSION OF THE PROGRAM:

The purpose of the University of California San Diego (UCSD)/Skaggs School of Pharmacy and Pharmaceutical Sciences (SSPPS) PharmD/PhD Program is to prepare students for positions in academia, government and the pharmaceutical industry that will require experience and knowledge in the conduct of original investigation related to the pharmaceutical sciences. Students who complete this program will be uniquely suited to perform basic and clinical research and to translate the results of the research to clinical practice. The course of study will prepare graduates for careers as faculty members in Schools and Colleges of Pharmacy or other health professions where they will engage in academic instruction and research, or to serve as leaders in drug discovery and development in the pharmaceutical industry.

The program is a joint program between the SSPPS and the Biomedical Sciences (BMS) Graduate Program in UCSD Health Sciences campus. Several aspects of the PharmD/PhD program draw parallels to other joint degree programs, in particular the longstanding UCSD Medical Scientist Training Program (MSTP), which offers the combined MD and PhD degrees. A distinction between the PharmD/PhD and the MD/PhD is that training for the PharmD/PhD degree has a specific vision to be closely aligned to the drug development process as well as therapeutic practices and outcomes. Students in the PharmD/PhD program will meet all requirements for licensure as a pharmacist in the State of California.

GENERAL STRUCTURE OF PROGRAM:

Students are selected for entry into the PharmD/PhD program from among 1st and 2nd year students who are currently enrolled in the SSPPS PharmD curriculum, although it is encouraged for prospective students to indicate their potential interest in dual degree training as early as the application and recruitment process. Applicants must be highly motivated and committed to improving health care through the conduct of research, as demonstrated by their ability to perform and aptitude for conducting research. Students admitted to the program complete all required coursework in the PharmD curriculum. During the summers between the first and second and second and third years, students explore research opportunities through laboratory rotations with qualified BMS Program Faculty at UCSD (or adjacent research institutes with programs affiliated with BMS, such as the Sanford Burnham Medical Research Institute or the Salk Institute for Biological Studies. Stipends and fellowships are available to support the summer research experiences (see Financial Aspects below). Applicants who are currently enrolled in the PharmD program must complete the PharmD/PhD application materials. Following receipt of the application materials, the PharmD/PhD Admissions Committee

will review applications and invite a select group of applicants for an interview. Following the interviews, a limited number of applicants may be offered admission to the PharmD/PhD Program (see Application and Selection Process). Early in the third (2+PhD+2 option) or fourth year (3+PhD+1 option) of the curriculum, students select a graduate program and laboratory/mentor for thesis studies in the BMS Graduate Program. Once the candidate has completed all of the requirements for the PhD degree, students return to complete the balance of their PharmD degree coursework and/or Advanced Practice Experience requirements. Following successful completion of all of the program requirements, the candidate will be awarded both the PharmD and the PhD degrees. It is anticipated that the program will take, on average, between seven (7) and eight (8) years for achieving the requirements of the joint degrees.

Other PharmD/PhD programs in the United States offer mechanisms for obtaining the dual degrees in a sequential fashion (see appendix Other PharmD/PhD programs at other institutions). In essence for these programs, the full requirements of the PharmD degree are completed before the candidate transitions to join an affiliated PhD graduate program. The UCSD/SSPPS program envisions instead true integrated dual-degree training, which is modeled in structure and spirit upon the longstanding successful MD/PhD training dual degree training programs available in the [UCSD MSTP](#) and those at approximately 120 other United States Medical Schools (see [AAMC listing](#)). To that end, the PhD degree doctoral training is completed as a 3-4 year block of intensive research experience in which the student leaves the PharmD curriculum, to return later for its completion after successful defense of the PhD doctoral dissertation.

While both the standard PharmD curriculum at UCSD SSPPS and the standard MD Curriculum at UCSD School of Medicine are completed in 4 years, there is an important general difference in that the PharmD curriculum is comprised of 3 preclinical years + 1 year of Advanced Pharmacy Practice Experiences, while the MD curriculum is comprised of 2 preclinical years + 2 years of Clinical Rotations. The PhD graduate training in a standard MSTP (including UCSD) is conducted between what would be 2nd and 3rd years of the standard MD curriculum. In the UCSD PharmD/PhD dual degree program, we offer two structures for the timing of the PhD training – a 2+PhD+2 option, which mimics the MSTPs in terms of chronology, and a 3+PhD+1 option, which mimics MSTPs in the sense that the PhD training is situated after the preclinical curriculum and before the clinical (Advanced Pharmacy Practice Experiences) component.

Table: Comparison of the General Structure of the UCSD PharmD/PhD Curriculum Options vs. a Standard Medical Scientist Training Program (MSTP) Offering Dual MD/PhD Degree

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
MSTP (MD//PhD) Standard Structure	Preclinical MD Curriculum		PhD Research Training Successful Thesis Defense (Typically 3 – 4 years)			Clinical Rotations of MD Curriculum	
UCSD/SSPPS PharmD/PhD 2+PhD+2 Structure	Preclinical PharmD Curriculum (Years 1-2)		PhD Research Training Successful Thesis Defense (Typically 3 – 4 years)			Preclinical PharmD Curriculum (Year 3)	Advanced Pharmacy Practice Rotations
UCSD/SSPPS PharmD/PhD 3+PhD+1 Structure	Preclinical PharmD Curriculum (Years 1-3, complete)			PhD Research Training Successful Thesis Defense (Typically 3 – 4 years)			Advanced Pharmacy Practice Rotations

OPTION A: 2+PhD+2 Structure

Students admitted to the program in the 2+PhD+2 option complete all required coursework in the first two years of the PharmD curriculum. During elective opportunities in the second year of the curriculum, students are encouraged to explore graduate coursework relevant to their area of research concentration. During the summer between the 1st and 2nd year, students will explore research opportunities through laboratory rotations at UCSD and at adjacent research institutes with faculty that hold a primary affiliation with the UCSD BMS Graduate Program, completing 2 rotations. During the summer after the second year of the PharmD program, students must complete their 3rd required rotation, and matriculate into the laboratory of the mentor chosen for the PhD thesis project/dissertation no later than the beginning of the fall quarter. *Students with excellent prior research experience and commitment to dual degree training considering the 2+PhD+2 option are encouraged to arrange a first laboratory research rotation during the summer prior to matriculation into the PharmD curriculum to accelerate the completion of rotation requirements and identification of the thesis laboratory.* Stipends and fellowships are available to support these summer research experiences.

Following successful completion of the second year of the PharmD curriculum and rotation requirements, students devote full-time to research for their PhD thesis project. Once they have completed all of the requirements for the PhD degree, students return to complete the third (preclinical) and fourth (Advanced Pharmacy Practice Experiences) years for the PharmD degree. Following successful completion of all of the requirements, the candidate will be awarded both the PharmD and the PhD degree; it is anticipated that the program will take, on average, 7-8 years to complete requirements for the joint degrees.

UCSD SSPPS PharmD/PhD Program - 2+PhD+2 option

Year 0	Summer	Encouraged to complete lab rotation
Year 1	Fall – Spring	Year 1 of PharmD curriculum
	Summer	Complete 2 lab rotations
Year 2	Fall – Spring	Year 2 of PharmD curriculum, Apply BMS
	Summer	Complete last lab rotation, select thesis lab
Years 3 – 5 (or Years 3 – 6)		PhD Doctoral Research in BMS Program Culminating in PhD Dissertation Defense
Year 6 (or 7)		Year 3 of PharmD curriculum
Year 7 (or 8)		Advanced Pharmacy Practice Experiences

An advantage identified by certain students and faculty of the 2+PhD+2 option is the ability to reintegrate with the PharmD curriculum in Year 3, which includes activities and processes geared to prepare students for, and to schedule the sequence and electives within, the Advanced Pharmacy Practice Experiences of the traditional 4th year. However, to achieve the 2+PhD+2 option, an extra premium is placed on completing research rotations efficiently and constructively during the first summer with a mind to identification of a thesis laboratory, and thus it requires an early commitment and focus toward the dual degree program. Completion of a qualifying BMS research rotation in the summer prior to matriculation can help achieve this goal.

All PharmD/PhD candidates will be instructed to set up regular annual meetings with the Experiential Education Team (Chair: James Colbert, PhD). These meetings will begin early in the PharmD 2nd year to ensure a specific individualized plan is established to ensure completion of the Introductory Pharmacy Practice Experience (IPPE) 300 hour requirements in a fashion that is never rushed or haphazard, but rather optimized for learning. For students following the 2+PhD+2 mechanism, it shall be understood that these students will need to take time during their PhD training to complete the IPPE requirements. The PhD advisor will assent to this requirement and understand that this training will be scheduled during the PhD years in addition to the graduate coursework requirements of the BMS program.

OPTION B: 3+PhD+1 Structure

Students admitted to the program in the 3+PhD+1 option complete all required coursework in the first three years of the PharmD curriculum. During elective opportunities in the 2nd and 3rd years of the curriculum, students are encouraged to explore graduate coursework relevant to their area of research concentration. During the summers between the 1st and 2nd years and 2nd and 3rd years, students will gain research experience through laboratory rotations at UCSD and at adjacent research institutes with faculty holding a primary affiliation with the UCSD BMS Graduate Program, completing 1-2 rotations. During the summer after the 2nd year of the PharmD program, students must complete their 3rd required rotation, and matriculate into the

laboratory of the mentor chosen for the PhD thesis project/dissertation no later than the beginning of the fall quarter. Stipends and fellowships are available to support these summer research experiences.

Following successful completion of the 3rd year of the PharmD curriculum and rotation requirements, students devote full-time to research for their PhD thesis project. Once they have completed all of the requirements for the PhD degree, students return to complete the 4th (Advanced Pharmacy Practice Experiences) year for the PharmD degree. Following successful completion of all of the requirements, the candidate will be awarded both the PharmD and the PhD degree; it is anticipated that the program will take, on average, 7-8 years to complete requirements for the dual degrees.

UCSD SSPPS PharmD/PhD Program - 3+PhD+1 option

Year 1	Fall – Spring Summer	Year 1 of PharmD curriculum Complete 1-2 lab rotations
Year 2	Fall – Spring Summer	Year 2 of PharmD curriculum Complete 1-2 lab rotations, select thesis lab
Year 3	Fall – Spring	Year 3 of PharmD curriculum, Apply BMS
Years 4 – 6 (or Years 5 – 7)		PhD Doctoral Research in BMS Program Culminating in PhD Dissertation Defense
Year 7 (or 8)		Advanced Pharmacy Practice Experiences

An advantage identified by certain students and faculty of the 3+PhD+1 option is the expanded time for exploration and examination of research opportunities through rotations in two full summers (between 1st and 2nd and between 2nd and 3rd), allowing the students more time for analysis and introspection regarding the ideal choice of thesis laboratories in which to complete their dissertation. However, to achieve the 3+PhD+1 option, an extra premium is placed on maintaining close engagement with the SPPSS faculty, administration and fellow classmates for optimal planning and scheduling the Advanced Pharmacy Practice Experiences (APPE) his engagement will occur throughout the often busy last year of PhD studies, but is essential for the dual degree student to make a smooth re-entry to completion of their PharmD training.

Students following the 3+PhD+1 mechanism students are anticipated to have already completed all of their IPPE coursework, but will not have the benefit of reentry into the 3rd year curriculum prior to beginning APPE rotations. In order to maintain connection with clinical pharmacy and emerging themes in therapeutics and practice guidelines, these students will be expected to attend the 2-hour Wednesday Therapeutics Conferences throughout their PhD training.

RECRUITMENT AND APPLICATION PROCEDURES

An essential element for consideration for the dual degree training, applicants must be

highly motivated and committed to improving health care through the conduct of research, as demonstrated by their ability to perform and aptitude for conducting hypothesis-driven research. The SSPPS website includes a description of the program and link to application materials.

In addition the standard secondary application for the SSPPS PharmD program includes a question "*Do you have significant research experience and are you potentially interested in exploring the combined dual PharmD/PhD program?*" Students who check this box have the opportunity to complete an additional essay describing their research experienced, and are strongly encouraged to provide the program with at least one letter of recommendation from a research mentor that can speak directly and thoughtfully to the candidate's research aptitude. During the SSPPS PharmD interview sessions, members of the SSPPS PharmD/PhD Committee leadership are available to provide small group presentations describing the PharmD/PhD program to prospective future applicants and answer any specific questions.

Admission Procedures: Applicants who are currently enrolled in the PharmD Program must complete the PharmD/PhD application (below) by the spring quarter of the first year (2+PhD+2 scheme) or the fall quarter of the second year (3+PhD+1 scheme).

Following receipt of the application materials and excellent performance in initial required research rotations, the PharmD/PhD Admissions Committee will review applications and conduct interviews. Following the interviews, highly qualified applicants may be offered provisional admission to the PharmD/PhD Program. Ultimately, PharmD/PhD applicants must meet all the requirements established by the BMS Program for admission of categorical PhD students, with a few exceptions (listed on page 9 below).

UCSD PharmD/PhD Leadership and Admissions Committee

Program Director: James McKerrow, MD, PhD

Program Founder and Co-Director: Palmer Taylor, PhD, Dean Emeritus

Graduate Training Advisor and Program Co-Director: Victor Nizet, MD

PharmD Curriculum Component Coordinator: David Adler, PharmD, Associate Dean

Coordination with Experiential Learning: James Colbert, PharmD, Associate Dean

Financial Planning Coordinator: Andrina Marshall, Associate Dean

Admissions and Student Affairs Director: Kimberly Ciero

Additional Standing Members

Deborah Spector, PhD, SSPPS Faculty and Director of BMS Graduate Program

Brookie Best, PharmD, SSPPS Associate Dean for Admissions and Outreach

Tracy Handel, PhD, SSPPS Faculty and Former Director of BMS Graduate Program

Vivian Hook, PhD, SSPPS Faculty and Director of SSPPS Research Committee

Farivar Jahansouz, PharmD, Experiential Education
Sarah Lorentz, PharmD, Experiential Educaiton

FINANCIAL CONSIDERATIONS

The long-term vision and ultimate goal of the SSPPS PharmD/PhD program is to develop and receive (the nation's first) NIH-supported training grant that works together with graduate training programs/PhD mentors to offset the entire cost of the dual degree training, akin to the current status of the UCSD MSTP and other top-flight MD/PhD training programs across the country. Until that time, partial financial support from the school has been and continues to be provided to SSPPS PharmD/PhD dual degree students. Stipends in support of summer research in BMS graduate rotations (before the 1st year, between 1st and 2nd or 2nd and 3rd years) are provided by schools NIH (NICHD) T35 training grant for summer research or other funds. Upon selection of the thesis laboratory, stipend and tuition support are the responsibility of the doctoral mentor, and may be derived from that individual's own grant funding sources or by successful application for graduate training programs. PharmD/PhD candidates are strongly encouraged to consider the program faculty and support of the [UCSD Pharmacology Training Program](#) (Director: Joan Heller Brown, PhD) or the NIH Training Program "Neuroscience Related to Drugs of Abuse (Vivian Hook, PhD) if resonant with their research training goals.

**UCSD Skaggs School of Pharmacy and Pharmaceutical Sciences
Supplemental Application for the PharmD/PhD Program
For Students Currently Enrolled in the PharmD Program**

Name: _____

UCSD PID Number: _____

UCSD SPPS Class of: _____

Print this form, complete and sign it, attach your personal statement and any additional supporting materials and submit it to the Student Affairs Office or send it to:

UCSD Skaggs School of Pharmacy and Pharmaceutical Sciences
PharmDPhD Admissions Committee
9500 Gilman Drive, Mail Code 0657
La Jolla, CA 92093-0657

Application to the PharmD/PhD Program must include two letters from persons who can provide a critical evaluation of your a) academic performance, b) undergraduate or employed research experience and c) personality. I intend to submit two letters from: (Enter the names of the persons who will be writing the letters)

- 1.
- 2.

Check one of the following:

I waive my right of access to the reference letters submitted in support of my application. I will inform the persons writing letters for me that I have waived my right of access.

I do not waive my right of access to letters of reference. I will inform the persons writing letters for me that I have not waived my right of access and I may be allowed to read the letters.

Personal Statement: Attach to this form a statement that describes your career plans, past research accomplishments in your proposed field, and your short-term and long-term career goals in pursuing the PharmD/PhD dual degree. Include all research and teaching experience you have had, providing titles, publications, research sponsors, institutions and dates. Attach copies of any publications. Place your name and UCSD PID number on all additional pages.

Signature: _____

Date: _____

Specific Guidelines for PharmD/PhD Candidates Within the Biomedical Sciences PhD Program

I. ADMISSIONS REQUIREMENTS

PharmD/PhD applicants must meet all the requirements established by the BMS Program for categorical PhD candidates, with the following exceptions:

Test Scores (GRE) - Not Required

Copies of Academic Records - Documents submitted by SSPPS

Application Fee - Waived

Any other admissions requirements that will vary from other BMS applicants – None

Students are evaluated during their second (2+PhD+2) or third year (3+PhD+1) of the PharmD curriculum for matriculation into the Ph.D. program during their fourth year.

II. COURSE WORK AND ROTATIONS

(A) Graduate Coursework During PhD Training in the Biomedical Sciences curriculum will be equivalent to that of MD/PhD (MSTP) students. Specifically, students are exempt from the Fall Semester core courses BIOM 200A and B, “*Molecules to Organisms: Concepts*” and “*Molecules to Organisms: Approaches*”. However, PharmD/PhD students are required to take the Fall seminar course (BIOM 201) and to complete all Biomedical Sciences advanced course work (electives) as required of other categorical PhD graduate students in the program. Graded core courses for first year graduate students in the Biomedical Science Program are not required for UCSD medical students. The applicability of previous course work toward the Biomedical Sciences Graduate Program course requirements will be evaluated on an *ad hoc* basis. However, elective requirements (15 units total; 8 for a letter grade) are the same for all students.

(B) PharmD/PhD students must have conducted research in at least two laboratories of UCSD faculty other than their thesis advisor. PharmD/PhD students will be guided to complete these laboratory rotations taken during the summers before the first year, between the first and second years, or between the second and third years of the pharmacy school curriculum to fulfill this requirement. At least **two** laboratory research experiences must have been in the laboratory of a member of the BMS Program. The evaluations of student performance during these rotations will be an important part of the application file for acceptance into the BMS program.

(C) PharmD/PhD students are required to successfully complete the Research Proposition Exam during the Fall quarter of their first year of PhD training in the Biomedical Sciences Graduate Program. This is a requirement for further advancement in the graduate program. PharmD/PhD students are also required to successfully complete the Advancement to Candidacy Exam by the Fall Quarter of their second year

of PhD training. Failure to complete these requirements on time will result in blockade of registration and financial support until the requirements are met.

(D) The significant teaching and outreach experience that is comprised within the PharmD curriculum will satisfy the 1-quarter Teaching/Outreach requirement as described in Section V of the general guidelines. Thus PharmD/PhD students will not be required to perform additional teaching or outreach during their doctoral research studies in the BMS program.

III. REGISTRATION REQUIREMENTS

A. The Graduate Council imposes the following requirements:

(1) If in any given quarter a student is spending the majority of his/her time within the graduate program the student must be registered as a graduate student that quarter.

(2) To receive the Ph.D. degree a student must be registered as a graduate student for a minimum of 6 academic quarters, three of which are continuous. OGS has waived the requirement that students be registered as graduate students in the quarter they receive their degree if they are registered in the School of Pharmacy during that quarter.

B. The School of Pharmacy requires, for licensing, that students be registered for a minimum of 12 quarters in the pharmacy school.

IV. COMPLETION OF RESEARCH WORK/RETURN TO PHARMACY TRAINING

All requirements for the PhD degree must be completed prior to leaving the graduate program to return to pharmacy training. This includes completion of the Research Proposition and the Advancement to Candidacy examinations, writing and defense of the thesis, and submission of the completed thesis manuscript to the library, according to OGS guidelines. With the above requirements in mind, a typical quarterly program of registration for a Pharm.D./Ph.D. student in the Biomedical Sciences Graduate Program is shown below. The normal time to degree for Pharm.D./Ph.D. students is 7-8 years.