November 16, 2017

Sarah C. Mangelsdorf, Ph.D.                        William Karpus, Ph.D.
Provost and Vice Chancellor for Academic Affairs    Dean of the Graduate School

Sent electronically

Re:       Review of the Molecular and Cellular Pharmacology MS (non-admitting) and PhD degree programs and doctoral minor

Dear Provost Mangelsdorf and Dean Karpus:

On behalf of the School of Medicine and Public Health, I endorse the ten-year review of the Molecular and Cellular Pharmacology MS (non-admitting) and PhD degree programs and doctoral minor.

After discussion at the November 15, 2017 meeting of the SMPH Academic Planning Council, APC members unanimously approved the report of the review committee, the recommendations of the committee for implementation, and the response of program leadership to the review committee’s report. Those reports are attached.

Strengths include the program director; program coordinator; a T32 award after several years without such funding; a focus on trainee quality; expanded professional development opportunities; and community-building events, including a newly established annual symposium and biennial program retreat.

The committee suggested areas of opportunities, and the program has responded:

1. **Declines in NIH funding may impact the number of trainers with the resources needed to train future graduate students.** By limiting the size of the incoming class (six students began in fall 2017, with over 70 trainers available), students are able to select from a large number of funded faculty.
2. **The expansion of the trainer pool (now over 70) may end up diluting its pharmacology focus.** The program has ensured that trainers have a pharmacology focus by requiring faculty to indicate how their research programs align with the Molecular and Cellular Pharmacology graduate program. The program also communicates regularly with its funding agency, NIGMS, to ensure that the research within the program aligns with the NIGMS mission.
3. **Efforts to broaden professional development opportunities may not be embraced by all trainers.** The program continues to work with trainers to make program expectations clear.
4. **MCP should employ a set of performance standards for faculty trainers.** Expectations for trainers are clearly outlined in communications and meetings.
5. *MCP should continue its efforts in URM student recruitment (currently has 13% URM students) and ensure that all students are aware of campus resources regarding cultural diversity.* URMC recruitment continues to be a priority for the program, with many efforts underway.

6. *MCP should ensure that trainers commit to allowing trainees to participate in professional development activities.* The program continues to work with trainers to make them aware of the importance of student professional development.

7. *Continue to build its alumni network.* Outreach to alumni occurs frequently. Alumni participate in program events, and the director connects students with alumni who have careers of interest.

8. *SMPH should provide suitable office space for the MCP program coordinator.* Issues regarding office space are now settled.

Both the SMPH Academic Planning Council and I concur with the review committee’s recommendation to continue the programs. We recommend that the next review occur in ten years.

Thank you for your consideration. If you require additional information, please do not hesitate to contact my office.

Sincerely,

Robert N. Golden, M.D.
Robert Turell Professor in Medical Leadership
Dean, School of Medicine and Public Health
Vice Chancellor for Medical Affairs
University of Wisconsin-Madison

Copies to:
Anjon Audhya, Molecular and Cellular Pharmacology Graduate Program
Kristin Cooper, Molecular and Cellular Pharmacology
James Keck, School of Medicine and Public Health
Richard Moss, School of Medicine and Public Health
Andrea Poehling, School of Medicine and Public Health
Parmesh Ramanathan, Graduate School
Marty Gustafson, Graduate School
Emily Reynolds, Graduate School
Jocelyn Milner, Academic Planning and Institutional Research
Sarah Kuba, Academic Planning and Institutional Research
Attachments:
  1) Program response
  2) Review committee report
MCP Review Response
Submitted by MCP Program Director Jon Audhya to SMPH Associate Dean for Basic Science Jim Keck, June 6, 2017

We thank Drs. Shull, Boekhoff-Falk, and Turner for taking the time to meet with our program leadership and students. We appreciate the findings of the Program Review Committee and will briefly respond to the perceived weaknesses identified in the Committee Report, as well as the recommendations made.

Because of declines in NIH funding, MCP will be challenged to ensure that there is an adequate number of engaged training faculty with sufficient funding to support trainees throughout their entire enrollment in the program.

Currently, the MCP program faculty includes members of the Center for Training in Pharmacology and Drug Development (~77 participants in more than 15 departments). Of these, we have selected a subset to participate as MCP T32 trainers (~30 faculty). Our average incoming class size is 6, so we feel that the ratio of students to faculty is appropriate at the present time. Additionally, a major criterion for serving as a T32 faculty member is long-standing, extramural research support (with the exception of new Assistant Professors, who require time to initiate their research programs). We require that students discuss long-term funding with faculty prior to joining a thesis lab. In cases where there is potential for funding challenges, the leadership of the MCP program communicates with the faculty member to ensure that sufficient resources will be available to support a student for their entire time in the program. Since 2014, when Dr. Audhya was asked to become the director of the MCP program, only one student has encountered difficulty with regard to research support. In this case, we identified two additional co-mentors for the student, who could augment funding available for stipend and research supplies. Additionally, we identified a teaching opportunity to help offset costs related to stipend support and tuition. Moreover, we engaged directly with the student to produce an extramural fellowship application. In 2017, the student was successful in obtaining an award from the PhRMA foundation, which will cover the majority of his stipend for the remainder of his PhD work. Although NIH funding will likely continue to fluctuate in the future, we believe that mechanisms are in place to ensure students join well-supported research labs with the resources necessary for completing a PhD thesis.

Although the MCP strives to maintain a unique focus and identity (i.e., molecular pharmacology) among SMPH training programs, this focus is not clearly apparent when one examines the training faculty roster and the projects of the current trainees.

All faculty affiliated with MCP have indicated to us how their research relates to the discipline of Pharmacology. We define Pharmacology broadly: the knowledge of the biochemical and physiological actions of any chemical that affects biological processes. Many chemicals act on cellular signaling pathways. The molecular basis of cellular signaling and its control by various chemicals is a major aspect of modern pharmacology, and this aspect is emphasized in the MCP program. We have worked closely with program officials at NIH to ensure that the research focus of our program is in line with the mission of NIGMS, and we have received positive feedback regarding our connection to the discipline of Pharmacology.

Effort within MCP to broaden the professional development opportunities of its trainees may not be fully embraced by the training faculty.

Professional development takes time, and we have made a point to encourage faculty trainers in the MCP program to provide sufficient time for students to explore several career options and broaden their expertise outside of the academic laboratory environment. In the vast majority of
cases, faculty agree that successful outcomes for students require dedicated time for professional development, and we will continue to highlight the advantages of facilitating this type of exploration. Ultimately, our students must enter the workforce, and their successes can only reflect positively on the faculty with whom they train.

**MCP should continue the practice of accepting only the best applicants into the program. Student quality, not quantity, will over time most contribute to MCP program success.**

We completely agree with this line of thought. For fall 2017, we interviewed more than 20 applicants, but made offers to only a small subset of students, who we believe were the strongest with regard to previous research experience and diversity. We will have an incoming class of 5 students, including one trainee who received a slot on the MBTG training grant. This is the first MBTG trainee to ever participate in the MCP program, and we are pleased to have recruited him. Importantly, 2 of the 5 students recruited are under-represented minorities, who we believe will enhance the dynamic of the MCP program.

**MCP should continue to develop, communicate and adhere to a set of performance standards for trainees. The goal should be to focus on setting a high bar for these standards as opposed to communicating minimal expectations.**

The MCP program has high expectations for its students. As such, we provide a highly mentored environment, which encourages students to take full advantage of their time in graduate school. Not only do we expect excellence in the research laboratory, but we also push students to be pro-active with their careers. Starting in year 1, each student meets with the MCP program director annually to discuss issues regarding individual development plans, professional development, as well as progress in the laboratory. Students are encouraged to seek their own funding, and the MCP program offers a grant writing course to facilitate this. Many of our students are awarded extramural funding, including international students, who regularly compete well for fellowships from the American Heart Association and other agencies. All students graduate with a minimum of one first author research manuscript, but we strongly encourage a higher level of productivity, to ensure that they are most competitive after completing their PhD work.

**MCP should similarly develop, communicate and adhere to a set of performance standards for faculty trainers. MCP should use its program resources, including the slots on the T32 award, to maximize participation of dedicated and skilled trainers in the program. The current expectations for trainer participation are minimal and likely suboptimal.**

The MCP program outlines clear expectations of all faculty trainers in the program in writing, including expectations that they 1) attend student seminars, symposia, and faculty meetings, 2) participate in the teaching mission of the program, and 3) participate in other program events such as orientation and recruitment activities. In the case of T32 faculty, who have T32-supported trainees, we specifically ask that they correspond with us annually to outline how they participate in the program. To address whether our current expectations are suboptimal, we will conduct a survey, asking students to respond on this issue. Currently, based on verbal feedback, students have largely been pleased with the increased level of faculty participation that has been shown over the past few years.

**MCP should continue to invest effort in recruiting underrepresented minority (URM) students. Building upon its recent success in this area, MCP should work to ensure all trainees have knowledge of and access to institutional resources related to achieving cultural diversity. MCP should ensure all trainers and trainees possess cultural competency.**
Over the past year, we have made many advances in the recruitment of underrepresented minority students. For example, as part of our recruitment and orientation activities, we invite speakers to discuss the benefits of cultural diversity. Many of our faculty trainers volunteer to visit universities with historically high levels of URM attendance. Additionally, others participate by attending conferences directed toward URM undergraduates. We will continue to offer students and faculty opportunities to enhance their cultural competency.

**MCP should continue to work to ensure that trainers embrace the importance of allowing trainees to participate in professional development activities that are outside the laboratory. Success in this endeavor will require that MCP has the means to provide stipend support for trainees when they are participating in these extracurricular training activities to avoid charging stipend and tuition costs to trainer’s grants during those periods. MCP should carefully oversee each professional development activity to ensure that the students, sponsors and mentors understand the objectives and expectations that are associated with that activity.**

As discussed earlier, MCP strives to highlight the importance of professional development to its faculty and students. In some cases, significant time commitments for this purpose must be made, and we will continue to work with local biotech and pharmaceutical companies to offer training opportunities that benefit both the student and the faculty trainer.

**MCP should continue to build its alumni network. This network may ultimately enhance the ability of the MCP to secure financial support from the pharmaceutical industry in the form of fellowships, travel awards, etc. Interactions between MCP and its alumni network should be logged so as to build a knowledge base that facilitates future communications and interactions with alumni.**

Every year, we reach out to all alumni and encourage them to remain active participants in the success of the MCP graduate program. In response, we have had several alumni return to campus to give career talks and research talks. In other cases, our alumni provide our students with advance notification of job opportunities, so that they can have the most time to prepare an application. We continually update our website to include up-to-date information regarding each alumnus from the MCP program, and we encourage students to reach out to these individuals as they begin to explore future career options.

**SMPH should support MCP by providing suitable office space for the MCP Program Coordinator. This office space should provide convenient interactions between the Program Coordinator, students, training faculty, and MCP leaders.**

We appreciate this recommendation. Since the time of the program review, our coordinator has more permanent office space. Although the space assigned (L5 suite in WIMR) is not as conducive to interactions with students and faculty, it is far superior to space on central campus or HSLC.
March 23, 2017

James L. Keck, Ph.D.
Associate Dean for Basic Sciences
University of Wisconsin, School of Medicine and Public Health
6214A Biochemical Sciences
440 Henry Mall
Madison, WI 53706

Dear Dr. Keck:

Herein is the report of the Program Review Committee for the Molecular and Cellular Pharmacology (MCP) Graduate Program regarding the status of this graduate program within the School of Medicine and Public Health. This Program Review Committee is comprised of Dr. Grace Boekhoff-Falk (SMPH, Cell and Regenerative Biology), Dr. Monica Turner (LS, Zoology, GFEC representative), and James Shull (SMPH, Oncology, committee chair). Ms. Andrea Poehling provided staff support. Our committee was charged on December 19, 2016, held its organizational meeting on Wednesday, January 18, 2017 and convened with MCP leaders, faculty, students and staff on Tuesday, February 28, 2017 for the site visit.

Report Summary. The Program Review Committee finds the MCP to be very well organized graduate program that is ably directed by a highly dedicated leadership team, headed by Dr. Anjon Audhya. The MCP coordinator, Ms. Kristen Cooper, is highly qualified and fully dedicated to serving the needs of the MCP faculty and students. MCP Program strengths include a core group of highly accomplished and well-funded training faculty, strong institutional support from the SMPH and financial support derived from a T32 award from the NIH. By comparison, the perceived weaknesses are few. Although these weaknesses may be of modest consequence on the overall success of the MCP at this time, their impact could become magnified by changing climate within academic medical centers.

Materials Reviewed. Materials provided to the Review Committee included the 2016 MCP Program Self Study, a T32 application submitted to the NIH in May 2015 (T32 GM008688-16A1) and the Summary Statement from the review of that T32 application (dated December 21, 2015). In addition, a number of documents were provided to the Review Committee by the Graduate School, including demographic data on applicants and notes of exit interviews with students conducted upon completion of training in the MCP Program.

Changes to Program. Organizational changes at UW-Madison have directly impacted the MCP. First, the SMPH reorganized three basic science departments, resulting in the Department of Pharmacology being abolished with its faculty moving to other SMPH departments. Second, the
Center for Training in Pharmacology and Drug Development (CTPDD) was established in 2014, specifically to serve as an administrative base for MCP. The CTPDD director is Dr. Audhya, from the SMPH, and the co-director is Dr. Jeffrey Johnson, from the School of Pharmacy (SOP). Third, the SMPH established the Biomedical Graduate Program Consortium in 2016 in an effort to better coordinate graduate programs operating within the school and gain economies of scale in administration of these programs.

Multiple substantive changes have also occurred within the MCP. 1) Dr. Audhya assumed the directorship of the MCP from Dr. Keely in 2014. 2) A long-standing training grant from the NIH was successfully renewed in 2016 after a multi-year lapse in funding. 3) In response to a concern noted at the last program review, the pool of MCP trainers was expanded to include 72 faculty, representing 12 departments within 6 schools. Twenty-six of these faculty are listed as trainers in association with the NIH T32 award. 4) MCP developed an assortment of training activities that are intended to enhance and broaden the professional development of its trainees. 5) MCP organized an annual symposium and a biennial program retreat.

**MCP Program Strengths.** The MCP exhibits numerous strengths that should enable it to successfully recruit, train and place outstanding students.

One noted strength is the MCP director, Dr. Anjon Audhya. Dr. Audhya exhibits strong leadership skills and a willingness to invest the time and effort needed to ensure MCP meets the diverse needs of its students while achieving appropriate balance with the interests of the training faculty. Dr. Audhya meets annually with each student to learn of the student’s progress, goals and concerns. The MCP students identified their meetings with Dr. Audhya as a key element of their training and their identity within the MCP. Dr. Audhya strives to set and maintain high standards for student qualifications and achievement. He has instituted metrics for ensuring the training faculty are appropriately participating in and supporting the activities of the MCP. Faculty trainers noted that Dr. Audhya works to build consensus among trainers and trainees in setting the MCP agenda. It appears that Dr. Audhya directs the MCP in a manner that allows an appropriate level of transparency to all stakeholders.

Ms. Kristen Cooper, the MCP Program Coordinator, is a second identified strength. Ms. Cooper serves essential roles in student recruitment, placement and career advancement; provides students with time sensitive information on academic requirements, deadlines and professional development opportunities; administers human resources and fiscal needs associated with the NIH T32 award; tracks and communicates with MCP alums via annual newsletters; and supports the MCP director and committees.

The recently refunded NIH T32 award is a third essential strength. Drs. Keely, Dr. Audhya et al. are to be congratulated on the renewal of this award following department restructuring within SMPH. Now it is essential that the MCP utilizes this funding to build momentum and program achievements that will ensure the successful renewal of this award in four years.

A fourth noted strength is that MCP leadership recognizes the importance of focusing on the quality, not quantity, of students accepted into the program as well as the quality and dedication of the training faculty. As competition increases for declining NIH resources, it will become ever more
important that we invest our time, effort and resources in training those students who are most capable of achieving success upon completing their training in the MCP.

MCP Program Weaknesses.

1. Because of declines in NIH funding, MCP will be challenged to ensure that there is an adequate number of engaged training faculty with sufficient funding to support trainees throughout their entire enrollment in the program.

2. Although the MCP strives to maintain a unique focus and identity (i.e., molecular pharmacology) among SMPH training programs, this focus is not clearly apparent when one examines the training faculty roster and the projects of the current trainees.

3. Effort within MCP to broaden the professional development opportunities of its trainees may not be fully embraced by the training faculty.

Committee Recommendations.

1. MCP should continue the practice of accepting only the best applicants into the program. Student quality, not quantity, will over time most contribute to MCP program success.

2. MCP should continue to develop, communicate and adhere to a set of performance standards for trainees. The goal should be to focus on setting a high bar for these standards as opposed to communicating minimal expectations.

3. MCP should similarly develop, communicate and adhere to a set of performance standards for faculty trainers. MCP should use its program resources, including the slots on the T32 award, to maximize participation of dedicated and skilled trainers in the program. The current expectations for trainer participation are minimal and likely suboptimal.

4. MCP should continue to invest effort in recruiting underrepresented minority (URM) students. Building upon its recent success in this area, MCP should work to ensure all trainees have knowledge of and access to institutional resources related to achieving cultural diversity. MCP should ensure all trainers and trainees possess cultural competency.

5. MCP should continue to work to ensure that trainers embrace the importance of allowing trainees to participate in professional development activities that are outside the laboratory. Success in this endeavor will require that MCP has the means to provide stipend support for trainees when they are participating in these extracurricular training activities to avoid charging stipend and tuition costs to trainer’s grants during those periods. MCP should carefully oversee each professional development activity to ensure that the students, sponsors and mentors understand the objectives and expectations that are associated with that activity.

6. MCP should continue to build its alumni network. This network may ultimately enhance the ability of the MCP to secure financial support from the pharmaceutical industry in the form of fellowships, travel awards, etc. Interactions between MCP and its alumni network should be logged so as to build a knowledge base that facilitates future communications and interactions with alumni.
7. SMPH should support MCP by providing suitable office space for the MCP Program Coordinator. This office space should provide convenient interactions between the Program Coordinator, students, training faculty, and MCP leaders.

Sincerely,

James D. Shull, Ph.D.
Professor, McArdle Laboratory for Cancer Research, Department of Oncology

Grace Boekhoff-Falk, Ph.D.
Associate Professor, Department of Cell and Regenerative Biology

Monica Turner, Ph.D.
Vilas Research Professor, Department of Zoology
Graduate School Applicants, Admits & New Enrollments

This visualization was created by the UW-Madison Graduate School Office of Academic Planning and Assessment. Questions should be directed to Peter Kinsley, peter.kinsley@wisc.edu.
Enrollment in Graduate School Programs

This visualization was created by the UW-Madison Graduate School Office of Academic Planning and Assessment. Questions should be directed to Peter Kinsley, peter.kinsley@wisc.edu.
This visualization was created by the UW-Madison Graduate School Office of Academic Planning and Assessment. Questions should be directed to Peter Kinsley, peter.kinsley@wisc.edu.
Graduate School Time to Degree: 2008-2017

Select Degree Level
- Doctorate
- Master’s

Select Student Category
- All

Disciplinary Division
- All
- Academic Plan
- Molecular and Cellular Pharmacology

Five years or less: 23.1%
5+ to 6 years: 33.8%
6+ to 7 years: 33.8%
7+ to 8 years: 4.6%
8+ to 9 years: 4.6%

This visualization was created by the UW-Madison Graduate School Office of Academic Planning and Assessment. Questions should be directed to Peter Kinsley, peter.kinsley@wisc.edu.
Completion Rates: 2007-2015 Entrance Cohorts

Select Degree Level
- Doctorate
- Master's

Select Entrance Cohort Group
- 2010-2012 Cohort

Select Student Category
- (All)

Disciplinary Division
- All

Academic Plan
- Molecular and Cellular Pharmacology

- Completed Plan: 73.1%
- Did not complete plan: 7.7%
- Left with a Masters: 11.5%
- Still enrolled: 7.7%

This visualization was created by the UW-Madison Graduate School Office of Academic Planning and Assessment. Questions should be directed to Peter Kinsley, peter.kinsley@wisc.edu.