November 10, 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 Environmental Toxicology MS 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 Environmental Toxicology MS and PhD degree programs and doctoral minor.

After discussion at the September 20, 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. The review has also been approved by the Academic Planning Councils of the College of Agricultural and Life Sciences and the School of Pharmacy (see attached letters).

Strengths include the program director; program administrator; a consistent trainee pool with a high acceptance rate by students admitted to the program; a strong record of URM recruitment, which is facilitated in part by a National Institutes of Health Summer Research Program R25 grant; strong courses and student satisfaction with the curriculum; many opportunities for diverse career training; and many community building events within the graduate program (e.g., annual retreat, weekly seminars, outreach, toxicology society meetings, and student representation on program committees).

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

1. Ensure continuity in leadership. The program has since developed a leadership transition plan: a current associate director would serve as interim director until a permanent director is named.

2. One administrator may not be sufficient for the program’s efforts. The program has since started working with SMPH Fiscal Shared Services and Human Resources Shared Services. The program also belongs to the SMPH’s Biomedical Graduate Program Consortium, which recently hired an additional student services coordinator, who has relieved the Molecular and Environmental Toxicology coordinator of some responsibilities.

3. Program handbook needs updating. With the recent addition of a new staff member, the coordinator will have time to update the handbook.
4. **Funding may become more difficult with challenges to the program’s T32.** The program submitted a T32 application in May, and the results will be known before the end of the year. The program acknowledges that funding provided by the SMPH’s Biomedical Graduate Program Consortium for five rotators per year is a significant and stable source of support, as are additional funds provided by the SMPH, the Graduate School, and the Office of the Vice Chancellor for Research and Graduate Education. The program is also aware that the SMPH provides short-term financial support should an emergency arise.

5. **A more formal mechanism for trainer recruitment is needed.** The program will bring this matter to its executive committee for consideration.

6. **Teaching experiences vary significantly among students in the program.** The program is implementing a mechanism for supporting TA and PA positions.

7. **Possible curriculum changes that incorporate toxicology risk assessment should be considered.** The program has amplified risk assessment in a required course, M&ENVTOX 626: Toxicology II. Risk assessment was the theme of the 2017 program retreat. Future course additions to more permanently include risk assessment will be considered.

8. **A low percentage of students are graduating with PhDs.** Graduate School data showed that 62% of students from the past 10 years have PhDs whereas the program reported this to be 70% (AAU institution average is 73%). The program’s analysis of student graduation data from 2006 to 2016 shows that only a small number of students have left the program with no degree (2 students, 3%) or with an MS (8 students, 10%), whereas the remainder are either in training (36 students, 47%) or have their PhD (33 students, 43%).

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 Andrea Poehling.

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:
Chris Bradfield, Molecular and Environmental Toxicology Graduate Program
Mark Maroeh, Molecular and Environmental Toxicology Graduate Program
James Keck, School of Medicine and Public Health
Richard Moss, School of Medicine and Public Health
Andrea Poehling, School of Medicine and Public Health
Kathryn VandenBosch, College of Agricultural and Life Sciences
Richard Straub, College of Agricultural and Life Sciences
Sarah Pfatteicher, College of Agricultural and Life Sciences
Nikki Bollig, College of Agricultural and Life Sciences
Steven Swanson, School of Pharmacy
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) College of Agricultural and Life Sciences APC approval
2) School of Pharmacy APC approval
3) Program response
4) Review committee report
November 7, 2017

TO: Sarah Mangelsdorf, Provost
    Bill Karpus, Dean of the Graduate School

FROM: Sarah Pfatteicher, Associate Dean of Academic Affairs, CALS

CC: Nikki Bollig, Assistant Dean, CALS Admin - UW-Madison
    Chris Bradfield, Professor, Director of MET
    Marty Gustafson, Assistant Dean, Graduate School
    Sarah Kuba, Academic Planner, APIR
    Jocelyn Milner, Director, Academic Planning and Institutional Research
    Dick Straub, Senior Associate Dean, CALS
    Kathryn VandenBosch, Dean, CALS

RE: Program Review of Molecular and Environmental Toxicology MS, PhD

We are pleased to report that the College of Agricultural and Life Sciences has completed the first stages of the program review for the Molecular and Environmental Toxicology master’s of science and doctoral degrees. The Academic Planning Council accepted the report as complete and thorough.

The CALS APC met on October 17th to hear from Professor Shigeki Miyamoto, who chaired the review committee, and Professor Sharon Long, the CALS representative on the review committee. APC discussion continued on November 7th with the director of the program, Professor Chris Bradfield, who shared with the council several ways in which the program has responded to the review in recent months, including creation of a leadership succession plan, and formalization of the teaching experience requirement. We are pleased to hear of this continued improvement to two already strong academic programs.

We appreciate the significant work of the committee and program in completion of the review process and look forward to working with campus leadership, GFEC, and the UAPC on the next stage of this review.
Oct 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 Environmental Toxicology MS and PhD degree programs and doctoral minor

Dear Provost Mangelsdorf and Dean Karpus:

On behalf of the School of Pharmacy, I endorse the ten-year review of the Molecular and Environmental Toxicology MS and PhD degree programs and doctoral minor.

After discussion at the October 6, 2017 meeting of the SOP 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.

Both the SOP 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 me.

Sincerely,

Steven M. Swanson, PhD
Dean and Professor
Friday, August 18, 2017

To: James Keck, Associate Dean of Basic Science (SMPH)
Cc: Andrea Poehling, Director of Academic Program Development & Evaluation (SMPH)
From: Christopher Bradfield, Director, Molecular & Environmental Toxicology
RE: Response to Ten Year Review Comments

Program Response to Ten Year Review Comments from Molecular & Environmental Toxicology Program

Directorship Transition Policy:
The Molecular & Environmental Toxicology Program is currently headed by Professor Christopher Bradfield. There are two Associate Directors, Dr. Wei Xu (Professor Oncology) and Dr. William Hickey (Professor of Soil Sciences). These two faculty members represent Molecular Toxicology and Environmental Toxicology, respectively.

In matters where Dr. Bradfield is not available, the appropriate associate director will provide guidance. (for example, if it is an issue from a student in the environmental track, Dr. Hickey would intervene; Dr. Xu would for a student from the molecular track) This established “chain of command” will serve in matters, such as if Dr. Bradfield were to be on sabbatical.

In addition, these Associate Directors would be able to seek the advice and counsel of the current Executive Committee members to assure that the best courses of action for the Program are enacted.

Should Dr. Bradfield step-down from the directorship, Dr. Xu is presumed to move into the (interim) directorship role. This is appropriate, given the amount of funding that SMPH provides to the Program; a faculty member affiliated with SMPH should serve as the Program Director.

From this juncture, it would be a decision of the SMPH Deans’ Office as to whether or not Dr. Xu would continue in this role permanently, or if a new director (from either an internal or external search) should be identified.

Additional Staff; Handbook:
In addition to the Shared Services provided by SMPH, the Biomedical Graduate Program Consortium has recently hired an 80% time employee. Among other duties, this candidate will be the dedicated coordinator for the Physiology Graduate Training Program. This will relieve Mr. Marohl of some of his responsibilities and enable him to provide full focus on MET.

With this further focus, he will be able to work on developing new initiatives for the Center and Consortium. This will include a focus and dedication to developing a more functional handbook.
Continued Financial Support for MET, Formalizing Teaching Experiences:
The Program’s T32 Training Grant was submitted 05/25/17 and we expect to hear back by the New Year about whether or not to have received a renewal (yrs 41-45). Should the proposal not be funded, we will go in again in the May 2018 call.

In the past year, through funding rules changes from the Graduate School, the Center has participate in a massive spend-down exercise, which has included the transfer of upwards of nearly $200,000. Conversations with Dr. Moss’ Office have alluded to the possibility of a “pay it forward” situation, in which our Center will be granted those funds back from the Deans Office because they were not used in the previous year. This money, when combined with MAMA, School & College Exercises (led by Tracy Cabot), Deans’ Office rotation funds, and support from the Graduate School (presuming steady support) have been estimated to provide solvency to the Program in terms of emergency student support, the funding of Center operations, and the development of a TA / PA funded program for at least three years.

By being able to provide funding for students to serve as preceptors in our core courses, we will be able to a) Provide funding so that faculty PI’s do not “lose a semester” when student are serving a preceptors, as part of their Program requirements; b) Provide funding opportunities for our students in the environmental sciences; and c) Allow us formalize the requirements and expectations of the preceptor roles, leaving it to the Program, not the individual instructors, to make the decisions.

New Risk Assessment Opportunities:
The desire of the students to have more risk assessment training has been well documented. We have implemented the following and plan to implement the following methods:
   a) Devotion of lectures to risk assessment in MET 626 (ongoing)
   b) MET 2017 Retreat’s theme was “Risk Assessment” and included four talks on “What is Risk Assessment,” and Risk Assessment in Academia, Industry, and Government. These talks were given by either MET faculty or alumni. (May 25,2017)
   c) A curriculum review during the director’s sabbatical may lead to the development of a more focused risk assessment class or module during a core course (future)
   d) Request for speakers to present more insights at the MET 800 seminar during 2017-18 academic year (future)

Recruitment and Training of New Trainers:
Training new affiliates for MET can be a difficult balancing act. On one hand, our faculty members teach out of dedication to the program, versus any other method, as we cannot provide any compensation, save for a training grant slot to a graduate student. Additionally, the home departments of faculty members may because “possessive,” were we to start implementing training of their faculty.

That said, the need is there.

This is certainly a discussion to be had with the Executive Committee, as well as perhaps incorporating the directors of the other programs in the Consortium, as they are all interdisciplinary programs and a service such of this could be advantageous to all.

Low reported percentages of graduate students with PhD’s:
With assistance from Kelly Haslam and Sara Lazenby, we obtained the names used in developing the statistics from the Graduate School. Thirty-nine names were listed, twenty-five of
whom obtained PHD’s, a rate of 64%. This is 2% higher than listed in the report. This could be a result of a PHD being awarded following the calculation.

The listing had students entering the PHD program at a range from Summer 1999-Fall 2003. These students are all outside of a ten-year (entry) window and were not included in our program review. Furthermore, some of the students included initially joined the program earlier than Summer 1999. We have added an analysis of the names and displayed it in a table similar to one used in the Program Review.

<table>
<thead>
<tr>
<th>Academic Year</th>
<th>Admitted</th>
<th>Left Program</th>
<th>MS</th>
<th>PHDs</th>
<th>%-age PHD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996</td>
<td>2+</td>
<td></td>
<td>2</td>
<td></td>
<td>100%</td>
</tr>
<tr>
<td>1997</td>
<td>2+</td>
<td></td>
<td>2</td>
<td></td>
<td>100%</td>
</tr>
<tr>
<td>1998</td>
<td>2+</td>
<td></td>
<td>2</td>
<td></td>
<td>100%</td>
</tr>
<tr>
<td>1999</td>
<td>12</td>
<td>1</td>
<td>2</td>
<td>9</td>
<td>75%</td>
</tr>
<tr>
<td>2000</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>33%</td>
</tr>
<tr>
<td>2001</td>
<td>5</td>
<td>1</td>
<td>4</td>
<td></td>
<td>80%</td>
</tr>
<tr>
<td>2002</td>
<td>8</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>50%</td>
</tr>
<tr>
<td>2003</td>
<td>5</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>20%</td>
</tr>
<tr>
<td>TOTALS</td>
<td>39+1</td>
<td>9 (23%)</td>
<td>5 (13%)</td>
<td>25 (64%)</td>
<td>70% (ave)</td>
</tr>
</tbody>
</table>

We think that the numbers displayed in the MET Program Review (Table 9) more accurately depict a ten year entry and departure rate. Additionally, this corresponds with the tenure of the Program Director and accurately reflects what he has accomplished with the classes that entered under his leadership. Below is an updated version of Table 9, reflecting recent graduates.

<table>
<thead>
<tr>
<th>Academic Year</th>
<th>Admitted</th>
<th>Left Program</th>
<th>MS</th>
<th>PHDs</th>
<th>Still in Program</th>
<th>%-age PHD</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>6</td>
<td>1</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>83%</td>
</tr>
<tr>
<td>2007</td>
<td>8</td>
<td>1*</td>
<td>1</td>
<td>6</td>
<td>0</td>
<td>75%</td>
</tr>
<tr>
<td>2008</td>
<td>11</td>
<td>0</td>
<td>1</td>
<td>10</td>
<td>0</td>
<td>91%</td>
</tr>
<tr>
<td>2009</td>
<td>7</td>
<td>0</td>
<td>2*</td>
<td>6</td>
<td>0</td>
<td>86%</td>
</tr>
<tr>
<td>2010</td>
<td>5</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td>2011</td>
<td>9</td>
<td>0</td>
<td>2*</td>
<td>4</td>
<td>4</td>
<td>44%</td>
</tr>
<tr>
<td>2012</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>6</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>5</td>
<td>0%</td>
</tr>
<tr>
<td>2014</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>6</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td>6</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>5</td>
<td>0%</td>
</tr>
<tr>
<td>2016</td>
<td>9*</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>9</td>
<td>N/A</td>
</tr>
<tr>
<td>TOTALS</td>
<td>77 (100%)</td>
<td>2 (3%)</td>
<td>8 (10%)</td>
<td>36 (47%)</td>
<td>33 (43%)</td>
<td>80% (ave)</td>
</tr>
</tbody>
</table>

1 The start date for some of the students included does not agree with program records; likely, they were admitted to the program, completed a masters, and then reenrolled for a PHD. They should not be included in a later year; rather, the year that they initially started.
2 Student was a transfer in and transferred out one year later.
3 One of the students entered as a terminal masters, was successful, and then continued in the program for a successful PhD, so is counted twice.
4 Of these two, one successfully completed and MS Degree in one lab before funding issues required a move to another lab. The second student was admitted as a terminal masters.
5 Two students have defenses scheduled for Summer 2017; we anticipate that they will be successful.
6 One student will deposit at end of summer; is not currently being counted.
7 Two of these students are enrolled as terminal MS.
8 “Early Return” 0% (2013, 2015) not included in calculation.
As this table illustrates, for classes entering in the past ten years, 43% are still studying and 47% of our students have graduated with PHD’s. This equates to 55% having left with higher degrees to this point.

The table below puts focus on classes that have no remaining participants. (numbers same from above; please see corresponding footnotes)

<table>
<thead>
<tr>
<th>Academic Year</th>
<th>Admitted</th>
<th>Left Program</th>
<th>MS</th>
<th>PHDs</th>
<th>Still in Program</th>
<th>%-age PHD</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>6</td>
<td>1</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>83%</td>
</tr>
<tr>
<td>2007</td>
<td>8</td>
<td>1</td>
<td>1</td>
<td>6</td>
<td>0</td>
<td>75%</td>
</tr>
<tr>
<td>2008</td>
<td>11</td>
<td>0</td>
<td>1</td>
<td>10</td>
<td>0</td>
<td>91%</td>
</tr>
<tr>
<td>2009</td>
<td>7</td>
<td>0</td>
<td>2</td>
<td>6</td>
<td>0</td>
<td>86%</td>
</tr>
<tr>
<td>2010</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td>TOTALS</td>
<td>37 (100%)</td>
<td>2 (5%)</td>
<td>4 (11%)</td>
<td>32 (86%%)</td>
<td>0 (0%)</td>
<td>87% (ave)</td>
</tr>
</tbody>
</table>

It should be emphasized here: For the five entering (and fully completing) classes listed here, 97% of our students have left with a higher degree.

Respectfully submitted,

Christopher Bradfield, Ph.D.
Professor of Oncology & Director, Molecular and Environmental Toxicology Center
March 8, 2017

To: Dr. Richard Moss
Senior Associate Dean of Basic Science, Biotechnology and Graduate Studies
University of Wisconsin School of Medicine and Public Health

From: Review Committee for the Molecular Environmental Toxicology MS and PhD degree programs

The following report summarizes our review of the Molecular Environmental Toxicology graduate program.

**Summary of activities and materials reviewed:**
Our committee [Karen Cruickshanks, Chuck Lauhon, Sharon Long, Shigeki Miyamoto (chair), Nicole Perna (GFEC representative), with support from Andrea Poehling] met on December 13th 2016 to review the Molecular Environmental Toxicology (MET) self-study and materials provided. In this first meeting, our committee (Karen was unable to attend but submitted questions by email) discussed the overview of the review process, discussed the contents of the materials provided, determined the agenda for the site visit, and prepared requests and questions for the site visit. Much of our discussion focused on our impressions of the MET graduate program based on the self-study and materials provided, noting strengths and weaknesses, and selecting requests and questions to be addressed further during our visit.

Our site visit took place on February 14, 2017. We met with the MET graduate program Director (Dr. Chris Bradfield); five members of the MET Steering Committee; representatives of the MET junior faculty and faculty who are not T32 trainers but who have had students in their labs; graduate program coordinator (Mark Marohl); two groups of current trainees (four early-stage and four late-stage students); and ending with a final meeting with Dr. Bradfield and Mr. Marohl. The overall conclusion from our review and site visit is that MET is an excellent graduate program, with outstanding leadership from the director and program coordinator, an engaged core of faculty, and strong students. A full critique of the program is provided below, including a number of recommendations from our review committee that we feel could improve an already strong program.

**Program strengths:**
The committee was impressed with multiple aspects of the MET graduate program. The trainees and trainers who participated in the site visit were generally very strong advocates of the program and in particular students were clearly satisfied with many aspects of the program, especially the program director and coordinator, and opportunities for career development activities, including teaching. They also uniformly praised the value of the annual retreats, focused topics covered during retreats and openness and receptiveness of the director and coordinator for feedback.

- **Excellent leadership:** The director of the program (Dr. Bradfield) was uniformly viewed by the students, faculty and the program coordinator as exceptional in his commitment, dedication, helpfulness and receptiveness to any concerns that students and faculty may have. In particular, his role in helping students who changed their thesis labs was viewed as very positive by the students who went through this potentially stressful process. He also spends considerable effort in identifying, recruiting and cultivating new trainers for the program. The faculty in leadership positions within MET seemed dedicated to programmatic improvements, such as career development initiatives and curriculum updating. All committees meet at least annually and the Steering Committee meets additionally as needed.
• **Excellent program coordinator:** The program coordinator (Mark Marohl) is clearly a strong asset to the program. All students interviewed invariably conveyed the excellent help that he provides to the students. He also carries out a considerable level of duties in addition to assisting existing students, including making sure the students meet milestones, facilitating relationships with PIs, making sure students are paid, and maintaining training grant appointments, progress reports, and HR appointments. In addition, he assists with T32 and R25 grant renewals, Superfund proposals, and responsibilities related to the Biomedical Graduate Program Consortium, including assisting with the early stage and advanced Responsible Conduct of Research courses. He is also the point of contact for prospective students and guides them through the admissions process. He is involved in campus recruitment events such as Biosciences Opportunities Preview Program (BOPS), and maintains contacts with about 100-150 alumni annually, organizing a social event at the national annual conference. He also initiated a monthly newsletter, which was noted by the students and faculty to be an effective method for disseminating relevant information. As recently as 18 months ago, the MET was supported by 2.5 employees. At present, Mr. Marohl is the only staff person dedicated to the program. He indicated that there are times when he does not have sufficient time to do everything he would like. The SMPH Dean’s Office has facilitated program support for fiscal services and human resources from SMPH Shared Services. The MET program is also supported by a team of student hourlies who work ~15 hours per week.

• **Consistent trainee pool:** The number of trainee admissions varied between 4-12 students over the past 10 years. While the number of applicants declined somewhat in the last three years (from mid-40’s-low 50’s from 2006-2013 to 28 in 2015-2016), the percentage of admitted students that enrolled is strong varying from 58-71% in the last three years. The success of recruiting reflects the effectiveness of the program-specific recruiting efforts but also seems to reflect the efficiency of the joint recruiting effort with three other programs (ERP, MCP, PGTP). This joint recruitment brings in ~40 students over two visits where visiting students are able to make meaningful connections with the current students and a broad array of faculty. The program director noted that there is little competition among the four programs for recruitment. The target class size is five new students per year. Funding for rotations in the first semester is provided by the SMPH Dean’s office. Beginning in the second semester all students are funded by the long-standing T32 NIEHS training grant, research grants held by the advisor, or through SciMed-GRS funding. Students noted that the rotations provide a valuable introduction to a variety of research areas and helped them identify appropriate mentors for their dissertation research. The average time-to-completion for PhDs is very good at 5.3 years.

• **Excellent record of underrepresented minority student recruitment:** The enrollment of domestic targeted minorities is substantial with 31% and 30% in Fall of 2014 and 2015, respectively. The general trend is increasing over the last 10 years. This has been achieved through a new NIEHS R25 grant, which will likely be renewed, partnership and funding from SciMed-GRS, Graduate School grants, and increased outreach. The MET program has had over 100 URM undergraduate students attend summer program since 1995. Seven of these students have been recruited to the graduate program, with four currently in training.

• **Strong core courses for student training:** The MET program provides 13 credits of core courses that lay the foundation for molecular toxicology and environmental toxicology. The program also requires seven elective credits, which typically include ecotoxicology series and statistics. Although this is a high level of course work, the students were appreciative of course work for improved knowledge base for their future careers. The chair of the curriculum committee indicated that the emphasis of the training is on problem solving. The program
website shows curriculum requirements clearly. Overall, the review committee felt that the program core curriculum was very strong.

• **Commitment to preparing trainees for diverse careers:** Many previous MET alumni have found positions in academia and government, but in the last ten years there has been an increasing trend toward industry careers. To meet this changing landscape, the program provides many opportunities for trainees to learn about diverse careers throughout their training. Foremost among them is the annual retreat where the program invites MET alumni speakers, including those from industry and teaching colleges, reflecting students’ inputs on the types of career paths that they are interested in learning. The director, program faculty and the program coordinator further provide career advice. Mark Marohl is particularly helpful at connecting students with MET alumni for career advice. In addition, the program requires all students to gain teaching experience through a one-day seminar on teaching and serving as TA or preceptor for at least one semester. Students appreciate teaching experiences, although the level of teaching load and experiences are currently uneven (see below). Those students who wish to improve their teaching experiences are encouraged to participate in Delta program. Finally, each student prepares a 13-page Annual Individual Development Review/Progress Report for the annual thesis committee meeting. Students also discuss their reports with their advisors one-on-one annually. This process is well received by the students as a way to learn about their progress toward the PhD and identify opportunities for preparing for their career paths.

• **Excellent sense of community among MET trainees:** The committee felt that the MET program has done a good job of building a program-specific community through several mechanisms. The weekly seminar series brings together students and core faculty members for face to face interaction on a regular basis. The annual retreats bring together students and faculty trainers for a longer period of time and have been highly successful in building MET community where students and faculty can provide feedback to the program. Students have opportunities to participate in outreach on campus and K-12 via the Student Liaison Committee. Many students also attend the annual toxicology society meeting to expand connections with the MET alumni community nation-wide. The larger community of MET alumni who are in academia, government agencies and industry clearly represents a unique strength of the program. MET provides travel funds or helps students to successfully find funding to enable conference participation. Inclusion of the student representatives in all of the program committees (except those that involve personnel issues) further promotes the ownership of the program by the students in addition to gathering input for program function.

• **Other strengths:** The Graduate Achievement Committee makes sure that students meet milestones and considers curriculum exceptions. If a student decides to leave with an MS, it is usually initiated by the student. Program-level learning goals, learning assessments and expectations are clearly articulated on the website and students are well aware of such information. Students are continuously funded via the T32 NIH training grant, student fellowships (~10% success rate), and/or faculty grants. The students and faculty are well informed of the transparent process of selecting T32 trainees.

**Program weaknesses and review committee recommendations:**
Through our committee’s review of the MET self-study and our site visit, we have identified potential vulnerability and areas of weaknesses that MET should consider to improve its program.

• **Directorship transition policy:** The committee was fully made aware of the recognition of Dr. Bradfield as an exceptional director for MET program. Dr. Bradfield mentioned a possible
upcoming sabbatical. Given the fundamental importance that the current director plays in the running and future of the MET, the committee felt the need for clear written plans for managing the program during a sabbatical and for transitioning to the next director. This policy could include the timeline and process for reviewing the director, and the process for reappointing the director. A smooth transition process is critical to minimize impact on students, staff and trainers.

- **Additional staff:** As noted above, Mark Marohl is a significant asset to the program who has a large and diverse set of responsibilities for this program and others. The committee recommends that the program hire additional staff to alleviate Mr. Marohl’s workload.

- **Continued financial support for MET:** The committee generally felt concerned with the financial future of the MET program. While the program currently has an NIEHS T32 training grant to fund 6 or 8 predocs and 2 postdocs, the director indicated that this may not get renewed because UW-Madison does not have a sufficiently large pool of NIEHS investigators to support such a training grant any more. Once this grant expires, all students have to be funded as RAs by PIs. This will limit the number of PIs who can take the students. This is particularly of concern for many students who are interested in environmental toxicology where funding is scarce. Other university units besides SMPH that currently receive benefits from the T32 and SMPH-funded rotations should commit long-term financial support for MET in the event of the loss of T32 or change of the directorship; rather than being a program-specific concern, this exemplifies a broader need for campus to provide guidance on how to achieve long-term financial and leadership stability for trans-disciplinary cross-college programs.

- **Recruitment and training of new MET trainers:** The current process of new trainer recruitment depends primarily on the director’s personal engagement/recruitment. New trainers are also recruited through teaching commitments in the core courses. An additional formal process of recruiting new trainers should be incorporated to maintain the strength of the trainer pool in the future. There appears to be no formal process for training the trainers that is specific to the MET program. Incorporation of a trainer training mechanism for MET should be considered.

- **Formalizing teaching experiences:** Teaching experiences and training currently vary considerably among students. The TA assignments are based on the number of students who are taking the course rather than the work load, which varies dramatically from course to course. A formalized process to reduce uneven teaching experiences will improve the learning outcomes in teaching, including a minimum set of expectations (e.g., lecturing).

- **Curriculum change metrics:** MET is undergoing a curriculum revision process to streamline curriculum and make it more interactive to improve learning experiences. Students interviewed felt that the current curriculum is demanding but the learning outcomes are well worth the extra class load. Students also indicated that more risk assessment should be taught in the curriculum or via speakers. This is a large part of toxicology which is not currently part of course work. Students also wished to have opportunities to interact with industry and/or government through externships or other mechanisms. The committee was generally unclear of the process and measure of success of curriculum change. The curriculum revision should accompany specific metrics to measure the successful outcomes of such changes.

- **Low reported percentage of graduate students with PhDs:** Data from the Graduate School showed that only 62% of students are graduating with PhD from MET in the last 10 years (compared to 73% at other AAU institutions). The program self-study indicates 10-year graduation rate of 79% in the last 10 years. During the site visit, the source of this discrepancy was not identified. Thus, this discrepancy needs to be clarified.
• *Updating handbook*: The committee noted that the MET student handbook is not up to date and needs to be updated to the Graduate School handbook template.

In summary, our committee recommends that the MET graduate program continue and that the next program review occur in ten years.

Sincerely,

Shigeki Miyamoto, Professor of Oncology (chair)
Karen Cruickshanks, Professor of Population Health Sciences
Chuck Lauhon, Professor of Pharmacy
Sharon Long, Professor of Soil Sciences
Nicole Perna, Professor of Genetics (GFEC representative)
### Ph.D. Apps, Admits, Enrolls

#### Applicants, Admits and New Enrollments

<table>
<thead>
<tr>
<th>Period</th>
<th>Fall Term</th>
<th>Division</th>
<th>School/College</th>
<th>Degree Level</th>
<th>Academic Major</th>
<th>Named Option</th>
<th>Gender</th>
<th>Diversity</th>
<th>New Enrollments</th>
<th>Admits</th>
<th>Applicants</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Fall, 2006</td>
<td>40</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>18</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fall, 2007</td>
<td>37</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>11</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fall, 2008</td>
<td>37</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>14</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fall, 2009</td>
<td>46</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>14</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fall, 2010</td>
<td>41</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>16</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fall, 2011</td>
<td>40</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>8</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fall, 2012</td>
<td>39</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>8</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fall, 2013</td>
<td>34</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fall, 2014</td>
<td>34</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>8</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fall, 2015</td>
<td>25</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fall, 2016</td>
<td>28</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>8</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

This visualization was created by the Graduate School. Questions should be directed to Peter Kinsley, peter.kinsley@wisc.edu.
Total Enrollment - Diversity

Enrollment

Period
Fall Term

Division
All

School/College
All

Degree Level
All

Academic Major
Multiple values

Named Option
All

Select a Topic
Diversity

- Domestic Targeted Minorities
- Domestic Non-Targeted
- International

Fall, 2006: 3 (8), 24 (10), 25 (10), 26 (9), 21 (8), 23 (9), 20 (6), 22 (6), 17 (4), 21 (5), 19 (5)

This visualization was created by the Graduate School. Questions should be directed to Peter Kinsley, peter.kinsley@wisc.edu.

1/2/2018 UNIVERSITY OF WISCONSIN 3
Total Enrollment - Gender

This visualization was created by the Graduate School. Questions should be directed to Peter Kinsley, peter.kinsley@wisc.edu.
Ph.D. Funding

Students with an Appointment of 33% or Higher

This visualization was created by the Graduate School. Questions should be directed to Peter Kinsley, peter.kinsley@wisc.edu.
Ph.D. Time to Degree
(Total time as a Graduate Student)

PhD Time-to-Degree Metrics, Peer Comparison

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>UW-Madison (Yrs)</td>
<td>5.0</td>
<td>5.1</td>
<td>5.4</td>
<td>5.5</td>
<td>5.7</td>
</tr>
<tr>
<td>AAU Peer (Yrs)</td>
<td>5.7</td>
<td>5.6</td>
<td>5.6</td>
<td>5.5</td>
<td>5.0</td>
</tr>
</tbody>
</table>

Select UW-Madison Program
Select Time-to-Degree Metric
Molecular & Environmental Toxic..