

October 31, 2006

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Dear Drs. Ortega and Austin:

We would like to thank you and the reviewers for a very thorough review of our Bachelor and Masters Programs. It was a great learning experience for us to listen to the reviewers' knowledge from their institutions. The following are our responses to the challenges and recommendations raised by the reviewers.

**Bachelor of Science in Medical Technology (MT)**

1. The program faces many of the same challenges as other clinical laboratory science programs throughout the country – primarily the balance of graduates needed vs. the number of positions vacant, keeping or increasing clinical affiliate training sites, and curricular changes.

**We agree that the balance of graduates needed vs. the number of positions vacant, keeping or increasing clinical affiliate training sites, and curricular changes are our challenges. We monitor how soon and where our graduates are employed after graduation and how many job positions our affiliates have available and we are continually evaluating and changing our curriculum.**

2. A major challenge is related to the increasing need for MT graduates, but the concurrent lack of increased rotation positions in affiliated hospitals for students to obtain clinical training. Due to current bench level technologist shortages, many facilities have reduced the number of students that they will accept. Over the past 3 years the MT class size has ranged from 23-25, but could possibly be increased to 35 if clinical sites were available. The intensified recruiting efforts by program personnel, especially Dr. Lampe, should be commended. As a result, both the quality and number of applicants has increased. In a recent year, there was more than twice the number of minimally qualified applicants (58) for the number of positions available (25). The program has space that could be made available to accommodate increased student numbers for junior level lecture and student laboratories. However, the problem is the lack of foreseeable increase in rotation sites and students ability to work at distant sites.

**We agree that our biggest challenge is the limited number of rotation positions in affiliated hospitals for students to obtain clinical training. As the reviewers have pointed out, we have worked hard on to recruit good numbers of quality applicants. Now, however, we need to focus on the problem of limited rotation positions. We think that we can come up with creative solutions because all involved, including the UW Medical Technology Program and all our affiliate hospitals, have the same goal of increasing the numbers of graduates from the program. We are developing plans to have a joint meeting of the Medical Technology Program and all affiliate hospitals to develop solutions to increase the numbers of the rotation positions.**

3. The mission of the Department states that it is to serve as a regional resource for laboratory services and educational programs. As of now, an overwhelming number of graduates are employed in the major affiliated hospitals. Dr. Lampe indicated she has affiliation agreements for clinical rotations with facilities approximately an hour away but students are reluctant to travel to those sites. The faculty may want to pursue options that attract increased numbers of students from these distant areas so that students would be more amenable to perform clinical rotations in an area close to home. In addition, the program may need to stipulate that each student must spend one rotation at a distant site.

**We agree that placing students and graduates at distant affiliate sites poses a serious challenge. Clinical rotations are six weeks in duration and we are reluctant to require that students travel to these distant sites for this short time. We are exploring the possibility of increasing the numbers of students in distant clinical rotations and renting a University vehicle to transport this group of students.**

4. Curricular change is always a difficult issue in that there must be a core of basic information on which to build the professional knowledge. This must be balanced against the amount of new knowledge that needs to be taught so that graduates can function as competent practitioners. These issues must be considered in light of the basic program structure and time constraints for delivering the courses. During interviews the students raised a number of curricular issues that may warrant consideration. This year's class felt that anatomy/physiology should be added as a pre-requisite to help them understand the pathophysiology aspects that are covered in the MT courses. The students mentioned that biochemistry and clinical chemistry are taken concurrently. They were almost unanimous in the opinion that this was a difficult situation from a learning standpoint. This was compounded by the fact that the current biochemistry course provides a broad overview of pathways, some of which are not human. There may be other biochemistry courses that are more appropriate or focused on human pathways that could be fitted into the curriculum.

**We agree very strongly that an anatomy/physiology course should be added as a pre-requisite to the professional phase of the MT Program. Since curriculum changes must be reviewed by the University Curriculum committee and their permission received before any changes can be instituted, we are currently preparing the documentation about adding this course as a prerequisite to send to this committee. We are also evaluating other Biochemistry courses offered at the**

**UW in search for a course more appropriate or focused on human pathways and are also considering whether to offer such a course by the Medical Technology Program faculty.**

5. There appears to be minimal focus on molecular diagnostics in the junior courses. With the addition of a molecular diagnostics track in the MS program and as more research and clinical testing moves in this direction, the students would profit by more in-depth exposure.

**Since we agree that the MT students should get more in depth exposure to Molecular diagnostics, we have introduced several lectures in the junior year including the following:**

**Lab M 322, Clinical chemistry, Autumn quarter, Dr. Tait gives two lectures on molecular techniques**

**Lab M 321, Hematology, Winter quarter, Lisa McDonnel discusses the application of molecular techniques**

**Lab M 421, Microbiology, Summer quarter, Dr. Goodyear has the students carry out a BLAST search with *Nocardia* sequences to determine the species of the organisms and also has the students speciate *Staphylococcus* strains using RT-PCR curves.**

We have also added or are planning on adding several laboratory exercises including the following:

**Lab M 322 or 418, Cynthia Wilcock is developing a new lab exercise using molecular techniques**

**Lab M 321, Lisa McDonnel and Dr. Karen Stephens developed an alpha-thalassemia lab exercise with electrophoresis & interpretation of multiplex deletion-specific PCR products**

**Lab M 421, Students use molecular techniques during their one week in virology.**

Currently, some MT students rotate through molecular labs on an elective basis including the following:

**~4 students spend one week in the molecular genetics laboratory**

**Some students conduct research in laboratories using molecular techniques.**

**We are currently discussing adding a one week rotation in a molecular laboratory to the senior year core clinical rotations.**

6. A concern involves the immunohematology course/rotation. From conversations with various clinical individuals and students, it appears that the student lecture and lab for this discipline is placed at the end of rotations. Students are brought back from clinical situations into a classroom / lab environment with the Puget Sound Blood Center staff setting up and teaching the course. All student exposure to blood bank testing is in this venue with the exception of one week at the Blood Center. This reversal of learning context seems to be a very awkward. Consideration should be given to moving the lecture/lab course at the end of the junior year (beginning of senior year before hospital rotations and to including some additional experience at the Blood Center since this is the facility that performs all testing for UW and Harborview.

**We agree that the Immunohematology course does not occur at the best time in the MT curriculum. We are currently discussing moving it to Summer quarter. This would place it before clinical rotations and allow us to spread the course out over the nine weeks of the quarter rather than condensing it in the current four weeks. We are also discussing adding an extra week to the clinical Immunohematology rotation.**

### **Masters of Science in Laboratory Medicine**

1. With respect to the two new tracks, they were created in response to the demand of students. Thus the creation of those tracks can be considered strength in so far as it reflects the responsiveness of the program to the needs of students and as a consequence may have increased the size of the program. With respect to the management track, however, the committee finds that the selection of classes currently recommended is too wide. A more defined curriculum may provide better guidance for the students.

**We totally agree with the reviewers. We met with our management faculty and after careful examination the faculty narrowed the number of courses to 8 including the mandatory management course offered by our department (please see attachment A).**

2. A second area of concern is the size of the program. While there seems to be a fair number of applicants, the program in the past has taken only 1-3 new students per year. As mentioned above, there was some concern on the small number of students spread over a multi-track program. On a more positive aspect, the high quality of faculty and their productivity makes for a very desirable area for educating more graduate student. In fact, more highly qualified candidates can in turn help the faculty in securing more grants (federal or private), and play an important role in one of the Department's key mission-increasing the reference laboratory activities.

**We agree with the reviewers and have developed plans to extend our visibility by advertising in various related publications such as *Advance, clinical chemistry news, medical technology*, as well as participating in regional and national meetings such as the ASCLS meeting in the NW and the national ASCP meeting.**

3. The committee applauds the effort of the current director Dr. Sadrzadeh in his effort in increasing recruitment. However, in order to maintain the strengths of this program, it may be desirable to recruit highly qualified applicants from all over the US and abroad. The committee recommends that the department along with the University fund 3-4 25% assistantships for first year students. In addition, we also recommend that faculty members who have grants fund graduate student (25-50%) research assistantships while they are working on their thesis projects. In addition, the department may consider funding 1-2 second year students whose thesis work may be relevant to the department's mission related to Reference Laboratory activities.

**We appreciate and agree with the reviewers' comments. It is imperative to note that the department has funded the entire program since its beginning, without receiving any funds from the UW. However, we are looking for options to fund assistantship and scholarship for our students. We have been providing travel support to our graduate students from our own Strandjord-Clayson award to attend national meetings. Also, we have requested Western Pathologists Quality Assurance Association to start an endowment for our program to provide scholarship to some of our students. The WPQAA will meet in February 2007 and will respond to our request. This organization has been actively supporting medical technology programs in the western part of the country and we are very optimistic in getting a positive response. In addition, we have contacted industry (eg, Beckman-Coulter) to support one graduate student per year. Furthermore, we have encouraged our faculty to support their graduate students for the year that student focuses mostly on research. We are in the process of contacting our alumni to request for their support to establish an "Alumni Scholarship". Finally, we hope that our graduate school will provide some financial support for some of our standing applicants (eg to waive the extra fee for non residents applicants).**

4. As mentioned above, given the popularity of the management track and that this track is inherently different from the other 7 (scientific) tracks, that more effort be devoted to further refine and develop this track. Specifically, the committee recommends that the director, by working closely with faculties who are currently advising students in this track and by seeking help from other departments, attempt to narrow down the selection of courses and help students to define the necessary experience which will be critical for their success as future managers of clinical laboratories or managers in related areas such as laboratories of biotechnology companies etc.

**Please see above.**

Again, thank you and the reviewers for an excellent review of the Bachelor and Masters Programs in the Department of Laboratory Medicine. We appreciate the time and careful attention that all devoted to our programs. Both programs will profit from the excellent suggestions.

Sincerely,

James S. Fine, M.D.



Chairman  
Laboratory Medicine