

**DEPARTMENT OF LABORATORY MEDICINE
UNIVERSITY OF WASHINGTON DECENNIAL
REVIEW**

JUNE 5, 2018

Department of Laboratory Medicine Review Committee

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I. SUMMARY OF PROCESS

The review committee first convened and received its charge letter on October 27, 2017 (Appendix A). The Department of Laboratory Medicine (herein after called the 'Department') submitted its Self-Study Report on April 2, 2018. Attached to the Self-Study was a copy of the recent final site visit report from the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS) on the undergraduate Medical Laboratory Science (MLS) program (November 17, 2017), along with the documents from the previous Graduate School review, held in 2006. These included the charge letter (May 2006), Self-Study Report, the review committee's report (August 2006), the response of the Department to the committee's review (October 2006) and the recommendation for 10-year approval from the Office of The Graduate School (June 2007).

The current committee's charge was to evaluate the B.S. and M.S. programs in the Department. The site visit took place on May 7 and 8, 2018. The final agenda appears in Appendix B. Each charge to the committee was examined during deliberations. The committee felt that the information acquired during this process was of high quality and sufficient to form the basis for this report. Areas of strength and opportunities for further growth were highlighted. The recommendation of the committee are made in the body of this report.

II. OVERALL DESCRIPTION OF THE PROGRAM

The Department of Laboratory Medicine was established in the School of Medicine in 1969. The new Department was chaired by Dr. Paul Strandjord. The new Department integrated clinical laboratory services from the University of Washington Medical Center (UWMC) and Harborview Medical Center (HMC). The current (interim) chair of the Department is Dr. Geoff Baird.

The department established the undergraduate MLS Program at its inception in 1969 (formerly the Baccalaureate program in Medical Technology). Ms. Laurianne Mullinax is the current Director of the MLS program. To date, the program has graduated over 1,200 students in 65 years. The MLS Program is a 2 + 2 program that culminates in the awarding of a Bachelor of Science (BS) degree. The first two years constitute the pre-professional phase of the program and can be completed at any accredited university, college or community college. The latter two years (professional phase) are administered and taught by faculty and staff in the Department. Graduates are trained to have in-depth knowledge of both laboratory and pathologic processes and their relationship to clinical medicine. There is a nationwide shortage of MLSs and demand exceeds supply. Regional laboratories look to the UW to train and supply the workforce.

The Master of Science (MS) in Laboratory Medicine was established in 1980. Dr. Steve Polyak is the current director of the MS program. To date, the program has graduated 88 students (average 2.2 per year). Applicants to this thesis-level program must have prior certification as an MLS from the American Society for Clinical Pathology (ASCP), or have completed an undergraduate degree in Microbiology, Chemistry/Biochemistry, or Biology. The MS program is an in-residence program. Full time students complete the MS in 24 months (eight quarters); part-time students can take up to six years. Students choose one of several possible pathways of specialization and complete a minimum of 36 credits. Presentation of each student's research is a requirement of the program.

The department is comprised of eight divisions (Chemistry, Immunology, Genetics, Hematology, Coagulation, Microbiology, Virology and Informatics). The faculty is responsible for a mix of clinical, teaching and research responsibilities that are organized in a matrix, which effectively spreads responsibility across disciplines and maintains a cohesive consensus-oriented departmental structure. The fact that a substantial proportion of program graduates are subsequently employed by the Department serves to enhance the educational effort.

III. BACHELOR OF SCIENCE IN MEDICAL LABORATORY SCIENCE (MLS) PROGRAM

History and Overview

The MLS Program is the only undergraduate program in the School of Medicine. The 2 + 2 program trains MLS graduates to understand the relationship between laboratory data and pathology to gain experience in and understanding of routine and special testing procedures, including troubleshooting typical problems found in the clinical laboratory. Graduates also work with laboratory information systems and gain experience in laboratory supervision and management, regulatory and compliance requirements, laboratory safety, quality management, communication, research design and conduct, professionalism and educational methods.

During the pre-professional phase of the program, students complete 90-quarter credit hours of pre-requisites in Biology, General Chemistry, Organic Chemistry, Human Physiology/Biology and Statistics. During the first professional year, students complete coursework in Biochemistry, Immunology, Clinical Chemistry, Hematology/Coagulation, Medical Bacteriology, Medical Mycology/Parasitology, Molecular Diagnostics, Urinalysis and Body Fluids Analysis, Immunohematology (Blood Banking), and Laboratory Operations. The fourth and final year is spent in clinical laboratories either within UW Medicine or at one of 15 affiliate sites. Core clinical rotations are offered in Chemistry, Hematology, Immunohematology, and Microbiology. In addition, each student completes an 'enrichment rotation' and related project in research, where he/she learns to develop and validate methods of basic science research. Research rotations are completed in the clinical, research and forensic laboratories of UW Medicine and the affiliate sites. During this final year, students also attend Departmental Grand Rounds, a Senior Seminar series and Case-Based Learning activities. To graduate, a student must have an overall "C" average or better in required courses and as a cumulative grade point average.

The UW MLS program is accredited by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS). NAACLS is the national accrediting agency that enables graduates to be eligible to sit for the ASCP Board of Certification (BOC) examination. This certification must be earned and maintained in order to work in the field. Certification must be renewed every three years by completing 36 credits of continuing education. The MLS program was most recently evaluated in 2017. During this process, all aspects of the MLS program were assessed: didactic and student laboratory curriculum, student satisfaction, quality of clinical rotation training, program outcomes, thoroughness of internal assessment and change management, and affiliate relationships. In addition, the NAACLS site visitors interviewed students, administrators, faculty, and clinical instructors to get an in-depth feel for the program structure, the support for the program, relationships among all the entities, and the adequacy of training. Based on the results of the accreditation visit, in early 2018, the program was awarded continuing accreditation status for the full seven-year period, with no deficiencies. The NAACLS site visitors were impressed with the level of support the department and affiliates provides to the MLS program.

Each year, between 60 and 80 applicants are considered for admission, with a target acceptance rate (and graduation rate) of 30 students. The majority of students complete their pre-professional work at UW, but others transfer from other institutions. Each year, a few students enroll who have previously completed a BS degree in a related field (post-baccalaureate students). Approximately 75% of applicants are female, one-third are Caucasian, followed by Asian, Hispanic/Latino and multiracial. For the graduating classes of 2018, 2019, and 2020, the mean GPA at enrollment for those accepted is 3.5.

To recruit a diverse pool of applicants, MSL program staff participate in numerous outreach events on an annual basis. In early 2018, the Department joined the UW Health Professionals Recruitment Collaborative sponsored by UW Medicine. Through this new collaboration, the MSL program has increased recruitment activities by 50%. Moreover, Program Specialist, Ms. Heather Eggleston is

currently championing creation of a departmental Diversity and Inclusion Committee. She is also considering investigating outreach to high school students by joining the National Association for College Admission Counseling, which would enable her to attend National College Fairs.

For the most recent three years for which data are available, the MLS program has enrolled between 25-30 students; 100% of these students have completed the MLS degree and have graduated. Between 2008 and 2017, the first-time pass rate for the MSL examination has been between 96% and 100%, with the exception of 2011, when it was 91%. This is significantly higher than the national average, which ranges between 79% and 84% for this same timeframe. Correspondingly, the mean MLS program certification scores are substantially higher for UW graduates when compared to the national average.

The majority of graduates are offered, and accept, positions either in UW Medicine or in the affiliated hospitals. In fact, the MLS program serves as the major source of bench-level laboratory scientists employed in the laboratories of UW Medicine. The MLS program also serves as one source of students who pursue the MS program.

Didactic instruction, including student laboratory sessions, is delivered primarily by the faculty and staff of the Department, although students can also take courses offered by the UW Departments of Microbiology and Immunology. Clinic rotations are coordinated by the staff of the MLS program. UW clinical sites include UWMC, HMC, Northwest Hospital, Valley Medical Center, and UW Roosevelt Clinics. Each affiliate site is administered and operated independently of the UW, pursuant to an affiliation agreement. Six UW faculty, three full-time staff, and five part-time staff share teaching and administrative responsibility for the MLS program. These individuals provide didactic teaching, hands-on mentoring in the student laboratories, plan courses, review and update curriculum, manage course evaluations, supervise clinical rotations, perform educational research, recruit and select incoming students, participate in the accreditation process, and perform administrative duties. Additional faculty and staff provide guest lectures, provide research mentorship and oversee clinical rotations. Medical Residents and MS students also participate in the educational mission of the MLS program. The student to teacher ratio in the student laboratories is 15:1. Near the end of each year, the academic advisor conducts an individual resume review for each student and coordinates a job fair for their benefit.

The MLS program faculty and staff are ahead of NAACLS course requirements in having added a didactic course in Molecular Diagnostics in 2015. The corresponding, one-week clinical laboratory rotation will be added in 2019. The faculty and staff are also attuned to current learning methods, espoused in the National Survey of Student Engagement. These elements include the incorporation of learning communities; community-based learning; exposure to research; internships, co-ops, field experiences, student teaching or clinical placement; study abroad; and a culminating senior experience (e.g. capstone, thesis, portfolio). The Department has been able to incorporate each of these elements, including a two-week international exchange program with a sister program in Japan.

Student assessment of learning is conducted using multiple methods. For didactic coursework, these include quizzes, traditional written examinations, wet/dry practical examinations, in-class presentations and case studies. For clinical laboratory rotations, students are evaluated across cognitive, psychomotor and affective domains, as well as on attaining rotation-specific objectives that are aligned with the ASCP BOC examination. For the reach rotation, students complete a competency checklist. Program assessment is completed using a variety of methods. Students evaluate each course and clinical rotation. These are used to assess overall program success and to make improvements for the following years. Year over year, ASCP BOC exam scores are a useful metric with which to gauge the quality of the program. Faculty and staff meet monthly or bimonthly to discuss relevant topics. These are augmented by Curriculum Review meetings, an annual Affiliate Advisory meeting, and periodic MLS program Strategic Planning meetings. Students also complete an exit survey and a one-year

post-graduation alumni survey. Employers also complete the one-year post-graduation survey for their new hires from the UW MLS program. An outcomes-based assessment approach (Management by Objectives-MBO) is employed throughout.

With over 1,000 employees, Laboratory Medicine is the largest department within UW Medicine. Financial support for the MLS program is provided solely by the Department of Laboratory Medicine. Sources of funding include Department-generated revenue and compensation for clinical services provided. Academic grants and contracts are important sources of revenue, as is the revenue generated by the reference laboratory operation. All equipment maintenance and repair, teaching supplies, textbooks, and reagents are purchased with Departmental funds. Travel support to attend professional meetings is also funded by the department, specifically the Clinical Laboratory Educators' Conference (CLEC), although staff suggested that clinical coverage would need to be offered to facilitate their attendance at this important educator's meeting.

In light of the detailed reports provided to the accreditation team, and the observations made during the visit, this review committee is confident that the educational basis of the MLS program is sound and that program graduates are competent clinical laboratory personnel.

Strengths of the Program

1. A major program strength is the commitment and financial support from the Department of Laboratory Medicine. In addition to salary support for faculty, the Department provides the majority of funds for the MLS program's operating expenses and for faculty attendance at professional meetings.
2. Similarly, the involvement of, support and commitment of the department's faculty and staff is clearly a highlight. Many faculty teach in the MLS program courses. Thus, students are taught state-of-the-art practitioner information.
3. There appears to be a good relationship between students and faculty. The students interviewed were highly enthusiastic about the program, stating that it is the strongest program in the State of Washington. They also spoke highly of the commitment of their instructors.
4. The accreditation report from the NAACLS indicates that UW graduates achieve superior passing scores on their certification examination, when compared to the national average.
5. The diversity of the student body is robust, both ethnically and culturally. Further, there is a breadth of geographic representation from throughout the US. Clearly, the program has a great reputation and is a highly sought after program. The efforts made to personally interview all minority applicants is commendable, and has been a successful strategy to increase diversity.
6. The five-week Research 'Enrichment' Rotation is a highlight; it is positively received by staff and division heads alike.
7. The addition of the one-week clinical rotation in Molecular Diagnostics (beginning in 2019) is forward thinking.
8. The department has added additional clinical affiliate sites since the prior review. The sites are very pleased to be training UW students and seek to hire them upon their graduation.
9. Significant progress has been made in establishing additional scholarship support since the prior review.
10. The evaluation tools are very robust.
11. The faculty and staff are to be commended for the strong, multi-faceted program assessment and quality improvement programs. These include student course evaluations, monthly faculty/staff meetings, curriculum review meetings, annual affiliate advisory meetings,

employer/graduate survey, strategic planning meetings, student satisfaction scores, and ASCP BOC examination scores. Keeping up with each of these metrics enables the faculty and staff to continually gauge the health of the program and identify improvements that can be implemented.

Challenges and Recommendations

1. **Need for more graduates:** 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 employment positions vacant, keeping or increasing clinical affiliate training sites, and curricular changes.
2. **Increase size of student body:** Program faculty and staff would like to increase the size of the student body, yet lack of adequate numbers of clinical sites, the need for additional administrative support, and the need for additional teaching staff and student laboratory staff present challenges.
3. **Add clinical sites:** Since the prior program review, additional clinical sites have been added. Faculty and staff are currently in discussions with two additional potential sites. One challenge with the newly identified sites and other potential sites is that they are geographically located outside the Puget Sound area, making it challenging for students to commute. As such, sometimes the students perceive these sites as less desirable. The provision of short-term housing would enable students to take turns rotating through these sites.
4. **Need for additional Program Administrator:** The current Program Operations Specialist (Ms. Heather Eggleston) is serving in many roles and takes on many necessary tasks including establishing a Diversity Committee and participating in numerous recruitment efforts annually. As one example, she would like to reach back to high school students to increase program awareness of the MLS program and careers, expand the pool of applicants to the MLS program, and meet the needs of employers at the local, regional and national levels. The Department should give serious thought to hiring an additional program administrator.
5. **Teaching (1):** Hire two additional teaching staff to relieve pressure on existing staff and to enable them to attend conferences such as CLEC.
6. **Teaching (2):** There is a lack of a consistent approach to the delivery, evaluation, and management of didactic coursework. To increase the number of staff available to teach, the department could consider funding and offering teaching assistantships to MS students (see below).
7. **Teaching (3):** Some faculty and staff feel there is a lack of recognition of existing teachers, and the tremendous backgrounds and expertise they bring to their positions. There is also a perceived lack of promotional opportunities for these individuals. One suggestion for improved recognition would be to provide support to facilitate attendance at annual CLEC meetings. This would entail providing clinical coverage to free up staff to attend (as above).
8. **Teaching (4):** With Molecular Diagnostics playing a larger role in Laboratory Medicine year over year, the students suggest that a pre-requisite course in genetics be required.
9. **Representation on Upper Campus:** As the only undergraduate program in the School of Medicine, the MLS program becomes invisible to administrators in upper campus and program staff would like to be better informed about policies for undergraduate programs. Specifically, there is a need to develop a stronger link to the UW Office of Undergraduate Academic Affairs.
10. **UW Advancement:** The Department could consider working with UW Advancement to increase the frequency of contact and the number of opportunities for alumni to participate in networking events, with the goal of increased program visibility, possibly resulting in additional financial support. The Department currently invites alumni who are one-year post-graduation to complete a student satisfaction survey. Repeated contacts in the years after graduation, particularly with an opportunity for alumni to reconnect with colleagues at social events, may result in both increased financial scholarship contributions and more intense visibility for potential students.

Overall Impressions of the MLS Program

The baccalaureate MLS program is a very strong program that attracts students from the region and nation. Students who graduate from the program are sought after as employees. The MLS program has extensive financial, faculty, and staff support from the Department of Laboratory Medicine. Without exception, those involved are committed to the continued success and further enhancement of this program. If additional clinical affiliate sites can be identified, the program may be able to expand to the new target of enrolling 36 students per class.

IV. MASTERS DEGREE (MS) PROGRAM

History and Overview

The MS program was last evaluated in 2006. The MS program provides additional training to certified Medical Laboratory Scientists to prepare them for educational, administrative or managerial responsibilities in the clinical or research laboratory.

This is a two-year full-time program. However, due to the financial burden this presents, many students work while pursuing the MS degree, which extends their time in the program by 2-3 years. The MS program admits an average of two students per year. Since 2008, the MS Program has had an annual enrollment of 7 to 13 students. The current enrollment in the program includes three women and three men, although more women are usually attracted to the program. The program also receives many international applicants.

Financial support for tuition is not routinely provided although those who are currently employed in a UW Laboratory can avail themselves of a tuition waiver for 500-level credits. Mentors provide in-kind support for laboratory consumables for thesis-related work. Finally, the Strandjord Scholarship provides a stipend of \$500 per month for 10 months for 2-3 second year graduate students per year.

As required by the UW Graduate School, for those entering with an MLS degree, an entering GPA of 3.0 in their previous final two years of study is required. For those entering with an undergraduate degree in Microbiology, Chemistry/Biochemistry or Biology, a minimum 3.2 GPA is required for the previous final two years of study.

At the end of the first quarter, students identify a preferred pathway. This approach allows students to have in-depth knowledge of one specific area. The following pathways are available: Blood Bank/Transfusion Service, Chemistry/Immunology, Hematology/Coagulation, Microbiology/Virology, Genetics/Molecular Diagnostics, Management/Informatics. The total number of required credits for the MS degree is 36, of which 9 are thesis credits. Required courses must be completed with a minimum GPA of 3.0. Students are required to attend two seminar courses: Grand Rounds (LAB 502) and Research Conference (LAB 510). Faculty provide feedback to students at these seminars. Dr. Polyak also hosts two social events yearly, to assess work-related issues in an informal environment.

After choosing a pathway, the student chooses a research project (thesis) through advisory meetings with the student's mentor, supervisory committee and through attendance at the Research Conference (LAB 510). The MS degree is awarded upon completion of the coursework with a minimum GPA of 3.0, and successful oral defense of the research project thesis.

As with the MLS program, the MS program is supported entirely from Departmental funds. The budget for the MS program consists of Departmental support for the Director (Dr. Steve Polyak), Academic Advisor (Ms. Eggleston) and Program Coordinator (Ms. Lara Williamson).

To enhance student diversity, the department has recently implemented a policy whereby the Admissions Committee considers all aspects of each applicant's application, considering qualifications in addition to quantitative skill sets, specifically by conducting one-on-one interviews.

Evaluation of the program is achieved through several routes. Most courses have an examination process in place (quizzes, final examinations, in-class presentations). Conversely, at the end of each course students complete a course evaluation. In order to assess the quality of the program overall, the faculty and staff convene an annual strategic meeting where standards are set using the management by objectives (MBO) approach.

Reinvigorating the MS program is a goal universally held by program faculty, staff and administrators. Whether or not to grow the program remains an open question. Even so, to increase local, regional and national visibility, in 2017, Ms. Eggleston has begun participating in several outreach events, both at UW and beyond. Demand for an MS does exist on the part of those already holding a MLS degree and certification. The challenge is that these professionals are unable to leave the workforce to return to school full-time. Further, a path to promotion exists even without earning an MS. The demand to establish an online MS is high. Further, Dr. Polyak has recently partnered with the UW Department of Global Medicine to propose establishment of a Global Laboratory Medicines program. This program would make widespread use of online material, augmented by in-country mini-courses. Dr. Polyak partnered with Dr. Lucy Peronne, Assistant Professor of Global Health, and submitted an application for this program to the UW International Training and Education Center for Health (ITECH). Hopefully, this novel and much needed program can be funded in the future.

The current core curriculum is limited and requires students to seek coursework outside of the department. Another recent advance is the proposal to develop a set of new courses housed within the Department, to update the MS core coursework and enhance learning opportunities for MS students. Launching this initiative will require additional departmental resources. Specifically, the Department proposes adding 10 core credits to the MS curriculum. Department leadership proposes the addition of a course in Research Design (LAB 515; 3 credits; graded), Critical Thinking (LAB 516; 1 credit; not graded), and Organization and Management in Laboratory Medicine (LAB 520; 5 credits; graded). The overall number of core credits would constitute 30 credits, leaving students to find a minimum of only six additional credits to meet the graduation requirement.

Finally, in meeting with UW Advancement, the reviewers learned that there may be an untapped alumni network here in the Puget Sound Region. The department currently invites alumni who are one-year post-graduation to complete a student satisfaction survey. Repeated contacts in the years after graduation, particularly with an opportunity for alumni to reconnect with colleagues at social events, may result in both increased financial scholarship contributions and more intense visibility for potential students.

Strengths of the Program

1. The MS degree program in Laboratory Medicine is one of a handful of such programs offered in the US by some of the highly ranked Laboratory Medicine Departments. The existence of such a program at the University of Washington may be taken as proof of the Department's commitment to education. While the program is relatively small, it has produced many well-trained graduates over the years. Many of the graduates remain in the Department and take positions in research /development or enter into a management rank as supervisor/manager. Since 2017, the program has been under a new director, Dr Steve Polyak. Dr. Polyak has already taken steps to intensify program recruitment and is considering novel approaches to increasing enrollment in partnering with Global Health.

2. As with the MLS program, the financial investment of the Department is strong, as is the commitment from faculty and staff to see the MS program succeed. The majority of faculty members who have had graduate students from this program strongly value the MS program as an integral part of the Department, and praise their past graduate students as valuable contributors to their own research program at the UW.
3. The rigor of the MS program is exemplary and trains scientists who are contributing to their project teams in the laboratories of their respective faculty mentors.
4. Both completed and proposed curricular enhancements should increase the attractiveness of the program to potential students. The addition of an informatics component to the management track was a necessary move. The creation of three new courses that will be housed in the Department will increase the rigor of the program and may mitigate frustrations students in the past may have felt due to having to seek courses in other departments to meet graduation requirements. Further, bringing these courses into the Department may increase recapture of tuition funds from Activity Based Budgeting (ABB).
5. The availability of the scholarship stipend of \$500 per month is very helpful.

Challenges and Recommendations

1. Need for Strategic Planning: The MS program has a difficult time attracting students. There is a self-stated lack of identify and lack of perception of value. The option of obtaining management skills through acquisition of a graduate degree is seen as non-essential, as advancement can be achieved through work experience. Further, students interested in pursuing a career in research will proceed from their undergraduate work directly to a PhD program. Third, at UW, there is no financial incentive to gain from this additional training. Finally, most students cannot leave the workforce to complete a graduate degree. The Department should consider conducting a long-term strategic planning exercise focused on identifying the needs and gaps in the field that can be filled by the MS program. Once completed, a decision can be made as to whether or not to increase enrollment. A 'rebranding' activity may be in order. What may be helpful are the facts that there is a need for MS-trained employees in rural settings, and that MS-trained professionals can fill the anticipated needs-gap in the general laboratory community, as experienced MLS personnel retire and remaining employees will need to advance in supervisory skills more rapidly. Separately, the development of an informatics track may appeal to some potential MS students.
2. Lack of a cohort effect: Pursuant to #1 above, with so few enrollees, the MS program suffers from the lack of a cohort effect; that is, the synergy that is ideally a part of a graduate school experience.
3. Need for part-time enrollment – online MS program: Also pursuant to #1 above, MLSs are infrequently able to enroll in a full-time graduate program. The need for a part-time program was discussed repeatedly during the site visit. One way to enable part-time enrollment would be to offer an online version of the MS degree. The benefits and drawbacks of such an offering should be considered. Specifically, the review committee suggests the Department look to other schools and departments within and outside of UW to identify successful models. To inform the decision about whether to create such an offering, The Department could consider obtaining specific and accurate information about current funds flow and tuition recapture from UW Professional and Continuing Education.
4. Graduate students are largely self-funded: Although the \$500 per month stipend is helpful to those who receive it, a wider pool of funding options would help to remove barriers for students. Specifically, the department should consider adding one or two teaching assistant positions to support the faculty and staff in their teaching duties.
5. Greater visibility within the School of Medicine: Although interim Department Chair, Dr. Geoff Baird is representing the educational mission of the Department very well within the School of Medicine at this time, whether the incoming chair will be able to do this is unknown. The

Department should consider naming a Medical Director of the graduate program to increase visibility with School of Medicine Administration.

6. UW Advancement: The department should consider working with UW Advancement to increase the frequency of contact and the number of opportunities to participate in alumni networking events, with the goal of increased program visibility and incoming financial support.

Overall Impressions of the MS Program

The MS graduate program in Laboratory Medicine is an outstanding program that reflects the strength of the Department of Laboratory Medicine at University of Washington. The graduates of the program have filled director/manager/supervisor positions within the Department. Currently, some of the trainees are also likely to be filling responsible positions for biotechnology firms or other research/service laboratories. The MS program offers an important service to mid-career medical technologists who desire further training. Given the large number of medical technologists trained each year, and the paucity of similar programs in the US, this program serves an important need for individuals with an undergraduate MLS degree. Providing an online version of this degree program would do a great service to the field.

V. Overall Summary

There is an opportunity to grow both programs to meet the workforce needs in the Washington, Wyoming, Alaska, Montana, Idaho (WWAMI) region and beyond. To this end, the Department should:

1. Develop a strategic plan and road map to meet the overall educational goals of the Department for the next ten years. The committee commends the commitment and support provided by the Clinical Department to achieve the overall educational mission of the Department, and acknowledges that the scope of the Department's educational mission extends beyond the two professional programs that comprised the scope of this review.
2. Explore providing online training. Look to other schools and departments within and outside of UW to identify successful models. Obtain specific and accurate information about current funds flow and tuition recapture.
3. Consider offering online material to prepare students for the ASCP BOC examinations. This would provide a new source of revenue for the Department's educational programs. The faculty and staff are confident such a program would be well received by recent graduates of the MLS program.
4. Develop a Diversity Plan and a Diversity Committee; strive for the diversity representing Seattle. Look to the plans of other departments within the School of Medicine and in other Schools within UW.
5. Devote effort to creation of a marketing plan to increase national visibility.
6. Work further with the UW Office of Advancement to increase alumni support and scholarship availability.
7. Hire a Medical Director to advocate for the program within and beyond the UW School of Medicine.
8. Hire a Director of Student Services to offload some duties from current staff. This would enable expansion of recruitment and marketing efforts, and provide time to devote to other activities.
9. Develop a Succession Plan for teaching, and begin to hire new staff, both to fill current needs, as well as to anticipate upcoming retirements.

In sum, the MLS and MS programs are two jewels in the crown of the UW Department of Laboratory Medicine, recognized nationally for its excellence. The departmental commitment to educating its professional workforce is strong, the training excellent, and the graduates highly sought after as employees.

VI. Final Recommendations

The review committee recommends the MSL and MS programs in the Department of Laboratory Medicine continue in their current status for the next ten years. The review committee further recommends that the Department provide one interim report at three years, specifically to provide an update of progress made to: 1) Establish a Departmental Diversity Committee, and 2) Conduct a strategic planning exercise and implement the resulting Strategic Plan for the educational programs of the Department.

APPENDIX A:

CHARGE TO THE COMMITTEE



UNIVERSITY OF WASHINGTON

Undergraduate Academic Affairs

&

The Graduate School

October 27, 2017

Department of Laboratory Medicine Review Committee

Beth Devine, Associate Professor, UW Department of Pharmacy (Committee Chair)

John Inadomi, Professor and Division Head, UW Department of Medicine, Division of Gastroenterology

Diana Wilkins, Professor and Division Head, Department of Pathology, MLS, School of Medicine, University of Utah

Vicki Freeman, Interim Dean, School of Health Professions, and Professor, Department of Clinical Laboratory, University of Texas Medical Branch

RE: Charge to Review Committee for the 2017-2018 Department of Laboratory Medicine Review

Dear Review Committee:

Thank you once again for agreeing to serve on the committee to review the degree programs offered by the Department of Laboratory Medicine at the University of Washington (UW): Bachelor of Science in Medical Laboratory Science and Master of Science. The Department of Laboratory Medicine is located in the School of Medicine at the University of Washington.

The Department of Laboratory Medicine changed their Bachelor of Science degree name from Bachelor of Science in Medical Technology to Bachelor of Science in Medical Laboratory Science in 2014. Even though the degree code for the BS in Medical Technology is listed as active, it will not be part of this review.

The review is in accordance with state legislative mandate and under direction of the Office of Academic Affairs and Planning in the Graduate School. It is conducted in coordination with the Office of Undergraduate Academic Affairs, School of Medicine Dean's Office, and the Office of the Provost.

Committee Charge

In general, the committee's charge in this review is to assess the quality of the undergraduate and graduate degree programs in the department and to provide its faculty with constructive suggestions for strengthening those programs. These reviews provide the University with a clearer understanding of each program's academic quality, educational value, and resource requirements. In addition, reviews provide context for the unit's role within the academic discipline, University and community.

As background information, the Department of Laboratory Medicine was last reviewed in 2005-2006. Documents related to the 2005-2006 program review are available on the current program review website <https://sites.google.com/a/uw.edu/laboratory-medicine-review/>

For the 2017-2018 review, the possible recommendations range from suspension of student entry into one or more of the department's programs to a recommendation for continuing status with a subsequent review in 10 years. Shorter terms can be recommended if the committee deems it appropriate. Equally important to the status recommendation for specific degree programs, the review can offer the unit and the administration an independent assessment of the overall "health" of the unit and advice on how it can be improved.

Self-Study and Site Visit

The Department of Laboratory Medicine will submit a **draft of the site visit agenda and its self-study by April 2, 2018**. Both documents will be made available shortly after receipt by the Graduate School. After reviewing the self-study, the committee may wish to initiate its work before the site visit to ensure a thorough and rigorous review.

Based on our experience, we suggest that the external reviewers be relied upon as content experts who can evaluate the quality of the unit from a national perspective. The external reviewers are also likely to be able to comment on recent developments in the field and their incorporation into the unit. UW reviewers are able to evaluate the unit within the larger context of the institution.

We encourage the committee chair to communicate with the chair of the department so that the department knows your interests and expectations, particularly for the site visit, and to communicate with other key faculty, if time permits. UW committee members may conduct interviews prior to the site visit as they deem appropriate, coordinated by the Office of Academic Affairs and Planning in the Graduate School.

The two-day site visit on **May 7-8, 2018** will culminate with an exit discussion, including:

- Graduate School Associate Dean and representatives
- Dean's Office representation from the School of Medicine
- Department of Laboratory Medicine representation
- Associate Vice Provost for Academic and Student Affairs
- Associate Dean, Undergraduate Academic Affairs
- Representatives from the Graduate School Council

During the exit discussion, you will provide an overview of the committee's emerging report. The first half of the discussion may include other unit representatives, while the second half will include only the review committee and administrators along with the school dean. Early in the second half, we will request your formal recommendation regarding the degree programs including your recommended timeline for the next program review.

Review Committee Report, Unit Response, and Final Recommendations

We request that your committee submit its written report within 4 weeks of the site visit. Specifically, the **written report is due June 5, 2018**.

A written response will then be provided by the unit and is due on **October 30, 2018**.

When the response is available, the report and response will be considered by the Graduate School Council. The Graduate School Dean and Associate Dean for Academic Affairs will then write a letter outlining the review and recommendations to the Dean of the School of Medicine, with copy to the Provost, for consideration and action.

Please note that upon completion of program reviews, the primary review documents become public documents and are placed on the UW Office of the Provost's web site. These documents include the self-study, the review committee report, the unit's response to the report, and the Graduate School Dean's final recommendation letter.

Specific Considerations for the Review

The most important objective of the review is an assessment of the academic and educational quality of the unit. Important questions include:

- 1) Are they doing what they should be doing?
- 2) Are they doing it well?
- 3) How can they do things better?
- 4) How should the University assist them?

In addition to the standard (Part A) questions from the academic program review guidelines, the unit should provide context for the issues it has outlined in the unit-defined questions for Part B, attached beginning on page five of this letter. The unit should also consider the following items as it writes the self-study, as discussed in the charge meeting. The unit may contact the review committee chair if it has questions about what written documentation would be most useful to the committee as it does its work.

- 1) The department will send their accreditation study after their fall accreditation visit, and that will be uploaded to the review website.
- 2) The department will provide a brief overview of the undergraduate and graduate programs in the self-study and will also include a brief description of the combined undergraduate and graduate (CUG) degree.

Thank you for your time and effort. Please contact Wesley Henry at weshenry@uw.edu with any questions you may have about the review.

Sincerely,



David Eaton
Vice Provost and Dean



Rebecca Aanerud
Associate Dean for Academic Affairs

cc: Patricia Moy, Associate Vice Provost for Academic and Student Affairs, Office of the Provost
Jason Johnson, Associate Dean, Undergraduate Academic Affairs
John T. Slattery, Vice Dean for Research and Graduate Education, School of Medicine
Geoffrey Baird, Chair, Department of Laboratory Medicine
Graduate School Council Representatives
Wesley Henry, Associate Director, Academic Affairs and Planning, The Graduate School
Kevin O'Brien, Admin. Specialist, Academic Affairs and Planning, The Graduate School
GPSS President

Department of Laboratory Medicine
Questions for UW Graduate School Review

MS Graduate Program:

1. The MS program typically gets many foreign applications each year, but fewer applicants are from the US. How can we increase local, regional, and national visibility of both the MS and MLS programs within the School of Medicine, University of Washington, and to the general public?
2. How can we attract more certified Medical Laboratory Scientists to the graduate program?
3. Is our MS graduate program curriculum in line with the needs of our students given their career aspirations and goals, which includes students with either MLS or non-MLS (i.e. BS) degrees. How can we better support the MLS-oriented and basic science-oriented students?
4. The graduate program course offerings in the Dept. of Laboratory Medicine are very specific and limited in number, requiring students to seek out courses in other departments. Recognizing this, how can the department advertise and facilitate better interactions with other departments and faculty in terms of mutual research and instructional interests?

MLS Undergraduate Program:

1. In Washington state and nationwide, there are currently more open MLS staff positions than there are MLS graduates. How can we increase awareness of our profession to improve recruitment so that we continue to have an excellent candidate pool and a full program?
2. MLS graduates must pass a national board certification exam in order to practice. How do our students compare against students nationwide and what are we doing to help keep our students competitive?
3. In what ways do you see our MLS curriculum needing to expand so that students have the proper entry-level skills when they enter the clinical lab?
4. The National Survey of Student Engagement put together a report outlining the best ways to engage undergraduates, which included the following:
 - Learning community or some other formal program where groups of students take two or more classes together
 - Courses that included a community-based project (service-learning)
 - Work with a faculty member on a research project
 - Internship, co-op, field experience, student teaching, or clinical placement
 - Study abroad
 - Culminating senior experience (capstone course, senior project or thesis, comprehensive exam, portfolio, etc.)

How is our MLS program promoting these engagement recommendations?

APPENDIX B:

MEETING AGENDA

UNIVERSITY OF WASHINGTON
Laboratory Medicine Academic Program Review
May 7-8, 2018

Day Zero 5/6/18

Night before site visit

6:30 pm

Review Committee working dinner

Mamma Melina

5102 25th Ave NE, Seattle 206.632.2271

Day One 5/7/18

Meeting Location

UWMC NW150 A & B

9:00 – 9:15 am

Meeting with Graduate School Academic Affairs & Planning Representative

9:15 – 10:15 am

Meeting with the Chair, Program Directors, Academic Advisor and Coordinators

Geoffrey Baird MD, PhD, Interim Chair, Department of Laboratory Medicine

Stephen J. Polyak PhD, Research Professor, Director of the Laboratory Medicine

Master of Science Program

Laurianne T. Mullinax MS, MLS(ASCP^{cm}), Lecturer, Director of the Medical

Laboratory Science Bachelor of Science Program

Heather Eggleston MEd, Academic Advisor for M.S./B.S. Programs, Program

Operations Specialist

Lara Williamson BA, Program Coordinator

William Bartram MA, Program Coordinator

10:15 – 10:30 am

Break

10:30 – 11:30 am

Meeting with Master of Science Program Director & Admissions Committee

Stephen J. Polyak PhD, Research Professor, Director of the Laboratory Medicine

Master of Science Program

Heather Eggleston MEd, Academic Advisor for M.S./B.S. Programs, Program

Operations Specialist

Susan Fink MD, PhD, Assistant Professor, Assistant Director Clinical Immunology

Laurianne T. Mullinax MS, MLS(ASCP^{cm}), Lecturer, Director of the Medical

Laboratory Science Bachelor of Science Program

Steve Salipante MD, PhD, Assistant Professor, Assistant Director Molecular

Microbiology and Clinical Molecular Genetics, Director Next-Generation

Sequencing Analytics

Brian Shirts MD, PhD, Assistant Professor, Associate Director Genetics and

Informatics

11:30 – 11:45 am

Break

11:45am – 12:45 pm

Lunch- Meeting with MLS and MS Students

12:45 – 1:00 pm

Break

1:00 – 2:00 pm	<p>Meeting with Bachelor of Science Program Committee & Course Instructors</p> <p>Daniel Bankson PhD, MBA, DABCC, Associate Professor, Clinical Biochemistry and Chemistry Instructor, Division Head Specimen Procurement</p> <p>William Bartram MA, Program Coordinator</p> <p>Patty Callahan, MT(ASCP), Clinical Microbiology Instructor, MLS2 Clinical Microbiology</p> <p>Heather Eggleston MEd, Academic Advisor for M.S./B.S. Programs, Program Operations Specialist</p> <p>Joanne Estergreen MT(ASCP), Clinical Coagulation Laboratory Instructor, Manager UWMC Hematology/Coagulation</p> <p>Tina Lockwood PhD, DABCC, DABMGG, Associate Professor, Molecular Diagnostics Instructor, Director Genetics and Solid Tumors</p> <p>Max Louzon MS, MLS(ASCP^{cm})SBB, Immunohematology Instructor, MLS Lead Transfusion Medicine</p> <p>Miriam Kim MLS(ASCP^{cm})SH, Laboratory Instructor, Clinical Rotation Coordinator, MLS2</p> <p>Laurianne T. Mullinax MS, MLS(ASCP^{cm}), Lecturer, Director of the Medical Laboratory Science Bachelor of Science Program</p> <p>Monica Pagano MD, Assistant Professor, Immunohematology Instructor, Associate Director Transfusion Services Laboratory</p> <p>Daniel Sabath MD, PhD, Associate Professor, Clinical Coagulation Instructor, Division Head Hematology</p> <p>Gretchen Van Kekerix MT(ASCP), Laboratory Instructor, Clinical Rotation Coordinator, MLS2</p> <p>Lara Williamson BA, Program Coordinator</p> <p>Min Xu MD, PhD, Assistant Professor, Research Rotation Instructor, Director Core Laboratory Seattle Children’s Hospital</p>
2:00 – 3:00 pm	Tour of Clinical & Student Research Laboratories at UWMC
3:00 – 3:15 pm	Break
3:15 – 4:15 pm	Meeting with Bachelor of Science Program Clinical Affiliate Site Representatives
4:15 – 4:30 pm	Break
4:30 – 4:45 pm	Meeting with Graduate School Academic Affairs & Planning Representative
6:30 pm	<p>Review Committee working dinner: Nell’s Restaurant 6804 E Green Lake Way NE, Seattle 206.524.4044</p>

Day Two 5/8/18**Meeting Location****UWMC NW150 A & B**

9:00 – 9:45 am

Meeting with Department Administration and UW Advancement Team
Marcelo Collantes, Assistant Director of Laboratory Medicine
Brett Norquist MT(ASCP), Director of Clinical Operations
UW Advancement Team Representative

9:45 – 10:30 am

Meeting with Division Heads
Dan Bankson PhD, MBA, DABCC
David Chou MD, MS
Brad Cookson MD, PhD
Robert Coombs MD, PhD
Jim Fine MD, MS
Jonathan Fromm MD, PhD
John Hess MD, MPH
Noah Hoffman MD, PhD
Andy Hoofnagle MD, PhD
Keith Jerome MD, PhD
Chihiro Morishima MD
Laurianne Mullinax MS, MLS(ASCP^{cm})
Stephen Polyak PhD
Colin Pritchard MD, PhD
Steve Salipante MD, PhD
Brent Wood MD, PhD

10:30 – 10:45 am

Break

10:45 – 11:45 am

Meeting with MLS/MS Program Directors and Academic Advisor

11:45 am – 12:00 pm

Break

12:00 – 2:15 pm

Review Committee Lunch and Executive Session
Includes 12:15-12:45 meeting with:
Wesley Henry, Director, Academic Program Review

2:15 – 2:30 pm

Break

2:30 – 4:30 pm

Exit Discussion
Unit Representatives (exit at 3:30 pm)
Laboratory Medicine Chair, Faculty, Staff and Program Affiliates

University Administrators

John Slattery, *Vice Dean, School of Medicine*

Kima Cargill, *Associate Dean for Academic Affairs, Graduate School*

Patricia Moy, *Associate Vice Provost for Academic and Student Affairs*

Jason Johnson, *Associate Dean, Undergraduate Academic Affairs*

Wesley Henry, *Director, Academic Program Review, Graduate School*

Nina Isoherranen, *Professor, School of Pharmacy, Graduate School Council
Representative*

Susan Herring, *Professor, Department of Orthodontics, Graduate School Council
Representative*