

Review of the Master of Science Degree in Genetic Epidemiology (MSGE)

June 29, 2009

Review Committee

Betty J. Gallucci, PhD
Professor
Biobehavioral Nursing and Health Systems
School of Nursing
University of Washington

James S. Pankow, PhD
Associate Professor
Division of Epidemiology and Community Health
School of Public Health
University of Minnesota

Summary of Process:

The review committee was charged with assessing the academic and educational quality of the MSGE program and providing a recommendation regarding continuation of the program. In developing this report, committee members reviewed the Self-Study Guide and conducted a site visit on May 29, 2009. The site visit included interviews with the program director (Dr. Karen Edwards), relevant administrators (Drs. Melissa Austin, Scott Davis, and Bruce Weir), other core faculty members (Drs. Timothy Rose, Michael Rosenfeld, and Stephen Schwartz), Institute of Public Health Genetics staff (Mr. Kevin Schuda and Ms. Barbara Snyder), current students in the MSGE program, and administrators from the Graduate School. The committee wishes to thank all of the participants for their time, hospitality, and helpful input.

Findings:

The MSGE degree, based in the Institute of Public Health Genetics (IPHG), was established in 2003 as one of the first programs of its kind in the U.S. This interdisciplinary program was built on the foundation of several world class programs already in place at the university, including epidemiology, biostatistics, genomics, and other related programs. As documented in the Self Study document, there are currently only five M.S. degrees in genetic epidemiology at U.S. institutions, located at Case Western, Johns Hopkins, University of Southern California, and Washington University (St. Louis). Of these, none (with the possible exception of Johns Hopkins) can rival the University of Washington's overall strengths in all of these parent disciplines. The program is therefore positioned to be at or near the top for the foreseeable future.

Dr. Karen Edwards has been the director of the program since its inception. She should be commended for her hard work in establishing the program, recruiting students, and securing funding for them. She

has clearly been a driving force responsible for its success in the first five years, serving as chair for 4 of 5 completed theses and mentor for 5 of 6 continuing students.

The program is supported by two staff members (Kevin Schuda and Barbara Snyder) who also support the other programs in the IPHG. These staff members are committed professionals whose many valuable contributions were noted by the students and others during the site visit. They also deserve much credit for the success of the program in its first five years.

One of the most impressive aspects of the program is the breadth of course offerings, both required core courses and elective courses. These include at least 16 courses offered through the IPHG along numerous other courses available elsewhere at the university. The breadth of courses in genetic epidemiology and public health genetics is likely unequaled at U.S. institutions. It is clear that these course offerings would not be otherwise possible for a relatively small, interdisciplinary degree program without the overarching structure of the IPHG, which provides resources and administrative support for multiple degree programs.

The program also benefits from superb faculty from a variety of disciplines. Beyond the six core faculty, there is a large reserve of additional faculty across campus and in the Seattle community who could potentially be available to expand the reach of the program.

The field of genetic epidemiology has witnessed explosive growth over the last 10 years. The need for masters-trained genetic epidemiologists is as great as ever, and most institutions with significant research activities in population and clinical sciences are in need of individuals with the content background and quantitative skills to perform data analyses, manage studies as research coordinators, and serve in other roles. Given the recent growth in the field and small number of similar programs in the U.S., employment prospects for graduates of the program should be excellent. It is likely that the program could grow substantially and still not be able to meet the future demand for masters-trained genetic epidemiologists.

Based on course evaluations and the site visit, students have been generally satisfied with the program. Current and former students appear to have made timely progress toward degree completion and graduates of the program have been highly productive. Many have published manuscripts generated through their thesis research. Several graduates have obtained faculty positions and have competed successfully for research funding in their areas of expertise.

Recommendations:

Based on its important strengths and track-record during the provisional five year period, we recommend that the program be continued with a subsequent formal review in 10 years. As discussed below, we have identified and developed specific recommendations in the areas of faculty oversight, mentoring of faculty, staff support, program growth, and strategic planning that we think will help ensure the future viability of this small but important interdisciplinary program. As part of the first recommendation (faculty oversight), we request that the program submit, within three years, an interim report to the Graduate School committee responsible for oversight.

Faculty Oversight of the Program including Program Development and Monitoring

As stated earlier, the breadth and depth of the courses in the MSGE are impressive. The courses serve a variety of public health programs and enhance the students' programs from other colleges. However, the quality of the curriculum will eventually suffer if a process is not in place to systematically review it.

Recommendation: To assure the continued integrity of the program and to maintain its excellence we recommend that the faculty develop a regular process to review the entire program on an ongoing basis. We further recommend that decisions reached through program review be posted on the web. This would close the loop and inform the students of their impact on program development. Finally, we recommend that the formal structure/policy/plan for faculty oversight is operationalized and reported, within three years, to the Graduate School committee responsible for oversight.

Establishing a process for ongoing program review would enhance communication between faculty, staff, and students, and allow for timely consideration and resolution of issues similar to those raised in the GPSS Report, such as concern about the delay in genetic epidemiology coursework until the third quarter and relevance of one of the required courses. Ongoing curriculum review is almost mandatory for a field such as genetic epidemiology in which statistical methods, laboratory methods, and core knowledge are evolving at such a rapid pace and older methods become obsolete in just a few years time. Because of the interdisciplinary nature of the program, it is imperative that the instructors of core courses, advisors, and others engage in regular dialogue.

Examples of specific questions regarding the curriculum that should be reviewed on an ongoing basis:

- Is the balance of elective versus required credits appropriate?
- Are enrollments in core courses and student course evaluations satisfactory?
- Do the required courses such as Genetic Epidemiology, Statistical Methods in Genetic Epidemiology, and Computer Applications in Genetic Epidemiology complement each other? Is there too much or too little overlap? Are they offered in the most logical sequence?
- Will graduates be prepared to adopt new methods and technologies (e.g., large-scale sequencing) that will likely be widely available in a few years?

One approach used successfully in other program reviews is to determine which core competencies the MSGE student should attain by the end of the program, and which competencies are needed for the future. The next step would be to determine how and when the students will obtain the competencies. The competencies could be obtained through a variety of experiences, course work, research, or field experiences. Lastly a method of program evaluation should be devised to determine if the competencies were obtained. During this process, it may become apparent that program competencies and course learning objectives are not always aligned. For example, the overall mission of the MSGE program includes a focus on interactions of genetic factors and the environment, but a review of course syllabi indicated relatively little coverage of gene-environment interactions relative to other topics.

Mentoring of Faculty

To ensure the viability of the program, careful consideration should be given to the career plans of all faculty associated with the MSGE. Attention to career development is essential because review of a faculty members' teaching, research and service responsibilities may be shared among several administrators. We note the excellent policy that all the IPHG faculty members meet with the IPHG Director to develop a "memo of understanding." However there is much more to running a program than teaching a course, such as student advisement, development of curriculum grids, and evaluation of the program. All these important responsibilities should also be noted in the memo of understanding.

Recommendation: Now that the program is established and has an excellent national reputation, policies should be developed to determine the tenure and succession process for the program director and/or to identify ways to share administrative responsibilities among program faculty.

It is important that a disproportionate burden of program oversight not fall on the director. This is especially important for directors who do not have tenure, as their research and consulting responsibilities might change abruptly which might leave the program vulnerable. Some programs have found it helpful to periodically rotate directorship responsibilities to build leadership skills among the faculty or to designate faculty other than the director to chair admissions or curriculum committees.

Staff Support and Faculty Meetings

Critical to the success of any program is staff support. The staff is doing an outstanding job as evidenced by the student comments. The students note that the staff has provided advice, help and direction. The program director has also praised the staff. The staff also noted their willingness to help with the day to day tasks of running the program.

In this time of budget cuts the staff feels very vulnerable. It is essential for the smooth operation of a program that good communication lines are established and maintained.

Recommendation: The director of MSGE or a designated faculty member of MSGE responsible for program/student affairs should hold regular staff meetings. It is important to include the staff in a

general program planning meetings also. In addition we recommend that the staff support the operation of the program by developing a calendar for regularly scheduled faculty meetings (perhaps quarterly), send out notices, ask for agenda items, staff the meeting and keep the minutes. The director of the program, her designee or curriculum lead should chair the meeting and prioritize the agenda items.

Growth of the Program

As stated earlier, the demand for genetic epidemiologists is currently high and will likely remain so for the foreseeable future. We think growth of the program will not only serve the field more broadly but will also enhance the student experience.

Recommendation: We recommend that one or more of the following opportunities for program growth should be considered by program faculty and relevant administrators:

- Develop a plan for more aggressive marketing of the program and recruitment of students for the MSGE program. A larger cohort of students will make the student experience more agreeable by ensuring that each incoming student has colleagues who can provide opportunities for shared learning, peer support, and a sense of community. We noted that the original proposal to establish the MSGE degree projected an enrollment of 7 new students per year by the 5th year of the program, but actual enrollments have been 3 and 1 students in the most recent years (2007-08 and 2008-09). We recognize that the program is, to some extent, competing for students with PhD programs in other areas (epidemiology, molecular biology, genetics) that may have more resources, which presents an ongoing challenge. The program may need to think creatively about expanded opportunities for training in genetic epidemiology, as outlined below.
- Add more program faculty from the University of Washington and Seattle community who have expertise and experience in genetic epidemiology. These faculty offer ongoing research opportunities in areas not represented by the current primary faculty, thereby increasing the likelihood that students can find advisors or mentors in their own areas of interest. Faculty growth could be accommodated through either primary faculty or affiliate faculty, as mentioned in the Self-Study document.
- Offer a graduate certificate program (educational outreach) for the potential applicants who possess an advanced degree or who are currently enrolled in other graduate programs. For example, many students in general epidemiology PhD programs are now incorporating genetics into their dissertation research and may appreciate the opportunity for further training in genetic epidemiology short of a formal masters degree. In this time of budget crises such a program might be quite successful and support faculty salary.
- Develop a PhD program in genetic epidemiology. As indicated in the GPSS Report, this was a request from all the students who attended the program review. It would also position the program to write training grants to increase resources for student support.

Administrative Support and Strategic Planning

All the administrators were very supportive of the program. They noted the new directions and demands from researchers and the public health community. Of special note was the recent commitment of a tenure-track position by the Department of Biostatistics to Dr. Tim Thornton, who will be joining the MSGE faculty in fall 2009. The administrators also noted that the Institute of Human Genetics Advisory Board and community contacts are available to help with strategic planning.

Recommendation: Now that it has navigated the provisional five year period and has a track record upon which to build, we recommend that the program engage in a strategic planning process in conjunction with the IPHG advisory board or other external advisors.

A strategic planning process would provide the opportunity to step back and look at the totality of the program and future directions. In particular, this process could be used to tackle some of the other major questions facing the MSGE, such as, "Is the formal master's structure the best one for the students?" "Should there be a post doctoral opportunity for students with a prior Ph.D. or professional degree?" "Would some students be better served by a graduate certificate program?"