Molecular Biology, Cell Biology, and Biochemistry (MCBB) Program: Self Study

I. Curricular Context

A. Degrees – only graduate degrees are offered
   Ph.D. in MCBB
   M.A. in MCBB

B. Undergraduate majors from other programs that depend on MCBB coursework
   None

C. Graduate programs offered by others that depend on MCBB coursework
   The Biology Cell and Molecular PhD Graduate program also requires MB721 (Graduate Biochemistry).

D. College requirements and programs
   Not applicable

II. Curricular Obligations and Needs

A. Obligations toward undergraduate education
   Not applicable

B. Obligations toward graduate education

   1. Courses that should be offered every semester
      None in MCBB
      The following courses taught by other departments:
      BI583/584 – Progress in Cell and Molecular Biology

   2. Courses that should be offered annually
      MB697 - A Bridge to Knowledge: A Practical Seminar for First-Year Graduate Students in MCBB/Biology
      MB721 – Graduate Biochemistry
      MB722 – Advanced Biochemistry
      The following courses taught by other departments:
      BI552 – Molecular Biology I (for MA students)
      BI553 – Molecular Biology II (for MA students)
      BI581 – Seminar in Biology: Grant-writing workshop
      BI/CH621 – Graduate Biochemistry (for MA students)
      BI622 – Advanced Biochemistry (for MA students)
      BI735 – Advanced Cell Biology
      BI753 – Advanced Molecular Biology
      SPH BS704 – Introduction to Biostatistics

   3. Courses that should be offered every other or every third academic year
      None

III. Planning for Effective, Equitable, and Sustainable Course Staffing

As an interdepartmental graduate program, the MCBB Director has no ability to dictate the course obligations of any faculty. Thus, we depend on cooperation with specific departments (primarily Biology) to cover the key courses required for our degree students. I have listed below the faculty who are currently teaching, and are likely to continue to teach, the required courses listed above.

   BI583/584 – Professors Naya, Hansen or others on a rotating basis (Biology)
In addition, there are a large number of elective courses in multiple departments (Biology, Chemistry, Biomedical Engineering, Sargent Health Sciences, Graduate Medical Sciences, School of Public Health) from which our students choose their preferences. Some of these are taught every year, some every other year, and some on and off. However, given the large number of choices the students have, over a number of years as a graduate student, this is not viewed as a problem.

IV. Executive Summary of Updates and Ten-Year Planning

1. Updates
   The major update from the last study (in 2012) is that the 2-credit Grant-writing workshop (currently listed as BI581) is a course now taken by all of our PhD students during their first or second years in the program. Within the next year, we intend to institute this as a requirement for the PhD students.

2. Goals and Planning
   **Graduate Curriculum**
   The indicated plan incorporates our recently revised curriculum for the MCBB PhD program. We anticipate that this revised curriculum, given its flexibility and breadth, is likely to be in place for many years to come.

   The curriculum for the current MCBB MA program is not anticipated to change significantly during the next several years, as it covers the basic materials in molecular biology, cell biology, and biochemistry, the three pillars of the program.

   The major potential addition which is being considered is the development of a new MA program, likely in close connection with the Department of Chemistry, for currently working technicians in pharmaceutical companies or biotech companies. This would require at least some additional courses, yet to be determined.

   **Numbers of students in the program**
   We anticipate that the current average of 4 to 5 PhD students/year and 0 to 2 MA students/year will likely continue into the future. The major consideration is to be certain that the number of admitted PhD students will be able to be placed in funded laboratories, given the current grant funding climate. However, since most of the required MCBB courses are shared as requirements for either undergraduate or other graduate programs within the various departments, a lowered enrollment for MCBB
would generally not change the overall course enrollments significantly, with the only possible exception of MB722.