FRED HUTCHINSON CANCER RESEARCH CENTER
SCIENCE EDUCATION PARTNERSHIP

MCB TAs 2009

The purpose of the MCB TA requirement is to develop teaching skills that students may use later in their careers. While a traditional TA experience is good preparation for a faculty position in a research university, diversification of the scientific job market ensures that many PhDs will spend some or all of their subsequent careers outside academia. Even academics are likely to find themselves explaining science to non-specialists such as journalists, business executives, and policymakers, as well as to the general public. For these reasons, students have a need for alternative educational experiences that teach effective communication with people who lack a technical background.

The FHCRC has in place a highly innovative educational program, the Science Education Partnership (SEP), which gives secondary school science teachers hands-on research experience through one-on-one pairing with a scientist-mentor. SEP was founded and is directed by Dr. Nancy Hutchison. The program is extremely well regarded by the Washington State education community, and it has attracted funding from HHMI, and other foundations. About 25 teachers take part annually. Many do the research component at FHCRC, but others work at partner sites that include the UW Department of Genome Sciences, the Seattle Biomedical Research Institute (SBRI), Institute for Systems Biology (ISB), Seattle Children's Research Institute, and ZymoGenetics. The program at each partner site has a slightly different format.

The MCB faculty saw SEP as an avenue for developing communication skills, and approved substituting one participation cycle in SEP for one conventional TA-quarter. MCB thus became a "virtual" SEP partner site. MCB students who TA with SEP are also responsible for additional activities beyond the one-on-one mentoring, making this a rigorous training exercise that is as demanding as any TA-ship. Permission of the student's adviser is essential for participation.

The MCB TA experience in SEP has three components:

I. Education workshops.

There will be four workshops on teaching techniques and curriculum development. These workshops are designed to help prepare you for mentoring your teachers in July, and the science outreach you will do to fulfill your SEP requirement. The workshops will be scheduled in the spring of 2009 before you spend time with your high school science teacher in the lab or have participated in a significant amount of science outreach. In this way, students can approach ideas about education through reading and discussion, test these in actual teaching practice, then subsequently reconsider and discuss these ideas, perhaps in a different light.

Workshop agenda and schedule (exact dates and times TBD):

Workshop 1: Teaching tools, strategies and curriculum development - April

Workshop 2: Engaging presentations, sharing science with the community - May

Workshop 3: Begin developing summer sessions - early June

Workshop 4: Refine session presentations – mid to late June

II. Mentoring.

MCB students will take part in one cycle of the SEP program. This involves:

March: Students review teachers' applications, and each student picks and contacts a teacher. If interests are compatible, the two agree to work as a mentor-teacher pair.

May: The student and teacher meet face-to-face, during a 2-hour orientation meeting. Goals and potential projects for the summer session are discussed during this meeting.

May/June: Student teams meet independently and with lead teachers and SEP staff to develop an interactive seminar/discussion series for the summer session (see below).

July: The main SEP program occupies 2.5 weeks. During the first 3 days teachers learn general lab techniques in group sessions. (This is directed by the SEP staff and lead teachers, not the mentors.) Teachers spend the following 5 days working one-on-one with their mentor on a research project in the mentor's laboratory. Teachers spend the final 5 days developing a lesson plan that translates selected aspects of their SEP experience (not necessarily their research experience) that they can use with their students.

Prior to the 5-day mentoring period, students will organize themselves into three teams (3-4 students each) and plan a curriculum for morning sessions. Past topics have been model organisms and the immune system. The team and their teachers meet each morning during the 5-day mentoring period, and the students lead an interactive presentation and discussion of his/her topic. This presentation emphasizes "hands-on" work, models, inquiry-based teaching, and other techniques learned during the education workshops. The remainder of each day is spent in the laboratory, working on the teacher-mentor lab project. **At the end of the summer session, each team will turn in a notebook containing their lesson plans, handouts, and activities used in the morning seminar sessions.**

The specific dates for the 2009 SEP mentoring activities are as follows:

March 6 – April 1	review teacher applications and select one teacher partner
Saturday, May 16th	afternoon meeting with teacher partners
July 16, 17, 20, 21, and 22	full-day mentoring period with teacher partner (morning seminar/discussion groups described above)
July 29	Open house & teacher poster presentations (mentors invited)

III. Science Education Activities

Many teachers who have been through the SEP program continue to request a scientist's help in planning and executing class lab exercises, including use of demonstration kits designed by the SEP staff. Each MCB student will do this type of consulting for a total of 20 hours, generally involving a variety of schools, teachers, and classroom projects.
The scientist and teacher work as partners. The scientist:

- assists in acquiring materials, if necessary
- assists the teacher, if necessary, in ensuring the exercise will work as planned
- may be called on to explain some parts of the exercise, but does not lead the class
- assists the students directly, answering questions about the exercise, and also questions of a more general nature about practicing science.

Many other non-classroom opportunities that involve interaction with the public are also acceptable for the 20 hours of required science outreach. These interactions can include meeting journalists, meeting education groups, volunteering for family science nights or science fairs, and other events that occur at the UW and FHCRC. The SEP staff will assist in identifying and scheduling these opportunities, however students are responsible for making sure that they participate in the required number of activities.

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