ADDRESSING THE NEED FOR TEMPLATES FOR TEACHING RESPONSIBLE CONDUCT OF RESEARCH AT A RESEARCH UNIVERSITY

John M. Essigmann
Massachusetts Institute of Technology

The requirement to provide a structured program of training in the arena of responsible conduct of research (RCR) for graduate students and postdoctoral associates supported on certain Federal training programs has been met in many ways at different institutions. After nearly two decades of experience with various formats for training, this paper is a call to the community to take stock of where we are and make the best and most efficient use our all too limited resources by sharing best practices. The Federal mandate for structured programs does not specify a one size fits all formula for training in RCR. As a consequence, much innovation has been exercised by the academic community in the development of programs that could be exported and used to benefit the broader scientific community. The goal of this paper is to describe one such small program, with the idea that this template could be added to a growing inventory of RCR programs, providing a ready set of options to academic units who need to employ such programs as part of their research training.

The formalized programs in RCR at the Massachusetts Institute of Technology were started in the early 1990s largely at the Whitehead Institute for Biomedical Research. The program consisted of carefully crafted scenarios in which researchers found themselves in awkward situations…regarding authorship, sharing of data, collaborations, conflict of interest, and so on.

The program was an eye-opener for many students, postdoctoral fellows, staff and faculty, who were stunned to see how varied the responses are of different people to the same scenario. This program was institutionalized largely through the efforts of Dr. Stephanie Bird, an MIT neuroscientist who found ways to support the entire scientific
community through facilitated discussions centered on such realistic scenarios.

The departure several years ago of Dr. Bird from MIT created a vacuum that put pressure on the faculty to innovate. We still rely heavily on the scenario-discussion model optimized by Dr. Bird, but we needed to do more. The template described below was developed by members of the MIT Toxicology Training Grant, but it has been used as a training vehicle by members of our Microbiology Program, our Biomechanics Training Grant and by some members of our Biotechnology Training Program.

The eight-day program centers on discussion of the ethical issues scientists see when viewing four movies. The discussions have been robust and the response very positive from our constituency.

The venue is as follows:

- Typically on successive Monday afternoons, one of the movies described below is shown in one of our classrooms.
- The following afternoon, there is a one hour discussion session in which the group as a whole will dig out what they see as the science-ethics issues it observes in the film. These sessions are facilitated by two faculty mentors.
- Immediately after the discussion session, each student or postdoc sends a list of bullet points to the convener in PowerPoint format that captures what they see as the major ethical issues and dilemmas observed. These bullet points are compiled and used as our institutional memory of the event.
- Each student is provided with a copy of Macrina’s “Scientific Integrity: An introductory text with cases,” which they use as a reference and as a guide to help frame the issues they uncover.

The content of the program is as follows:

- “Glory Enough for All.” This film from the 1980s chronicles the quest of Banting, Best, Collup and McLeod for a safe and effective insulin preparation to be used to treat diabetes. The theatrical quality of this (and the other) films is excellent—however—because these films were produced as commercial ventures, one cannot be certain that they accurately present the facts of the search, for example, for insulin. Nevertheless, accurate or not, the situations portrayed to have a “real” feel to them and one can easily use the theatrical content as a platform for discussion. In this film, a tension develops in the McLeod laboratory owing in part to the fact that two teams
were put in competition with one another, each with the goal of a medicinally active insulin preparation for clinical trials. As a consequence of a paranoid atmosphere, Collup did not keep an adequate research notebook out of concern that his competitors in the same group would see his notes and get the advantage. Collup was the first to obtain an active principle but, with much embarrassment, he had to yield ultimate success to Banting and Best. Collup was unable to recall details of his purification and was ultimately unable to reproduce his initial success. Once his competitor Banting had his active principle, he chose the daughter of the United States Secretary of State as an early recipient of one of the first doses of the drug. The choice of subjects in a clinical trial is an obvious issue that generated much discussion among those who watched this film.

- “And the Band Played On.” This film focuses on the efforts of Donald Francis of the Centers for Disease Control in his mission to have the HIV/AIDS epidemic recognized and addressed by both the Federal government and the mainstream medical establishment. HIV/AIDS was not a popular topic in the years that Ronald Reagan was President. Indeed, it took contamination of the blood bank and the presence of disease in the non-gay community to galvanize efforts to take the disease seriously. The role of Dr. Robert Gallo, who later needed to defend himself against a misconduct investigation owing to uncertainty over the source of his HIV strain, was the source of much discussion by the students. This film is a wonderful one for students who wish to learn about the political and scientific contexts within which controversial areas of research are conducted. Today, a similarly controversial film could be made concerning the use of human stem cells.

- “Einstein’s Wife.” This film deals with authorship issues. Albert Einstein’s first wife was a physicist by the name of Mileva Marie. It is unclear to what extent she participated in Einstein’s work, but it is clear that her name did not appear on his key publications. The film presents the argument that she may have been marginalized professionally and personally by husband, both during and after their marriage.

- “Race for the Double Helix.” This film gives the perspective of Watson and Crick as they compete with many others to be the first to find the structure of DNA. Much of the style and pace of modern biology, if not science in general, was set by the episodes depicted in
this fast-moving film. The role of Rosalind Franklin, in particular, is spotlighted and her less than optimal relationship with her mentor, Maurice Wilkins. Few films capture as many issues for discussion as this one.

SUMMARY

The MIT program is one that is in a constant state of evolution. The template above has worked extraordinarily well for us as long as we have good faculty participation. The faculty members present not only facilitate discussions, but they add detail and draw upon their experience as mentors. It was easy to spot ethical issues in each film. It was of great interest to ask the faculty how they would have addressed these seemingly real life scenarios if they were to encounter them in their work at MIT. The use of mainstream or near-mainstream films kept the interest of all in the room and stimulated a discussion that included all of the approximately 30 participants. The response to the program was uniformly positive. Indeed we have found that this format eliminated some of the barriers that have plagued us in the past…barriers to faculty participation. The program stimulated such interest among the students and postdoctoral fellows who participated that their enthusiasm brought in the faculty.