Karen Muskavitch's Commentary on "Who Framed Roger's Data?"

Commentary On
Who Framed Roger's Data?

This case focuses on the multiple relationships that are an essential part of the training of graduate students in the sciences, particularly in the laboratory sciences. The primary emphasis is on exploring the responsibilities of the faculty members who supervise and advise a student's dissertation research, as well as the responsibilities of the student himself. However, one can also use this case to initiate a discussion of the rights and responsibilities involved in the roles of rotating first-year graduate students, senior graduate students supervising less experienced students, and faculty members hoping to recruit new students to the laboratory.

Many universities are now beginning to articulate their expectations of faculty advisers,See, for example, the "Guiding Standards for Faculty Supervision of Graduate Students" of the Graduate College of the University of Illinois at Urbana-Champaign (http://www.grad.uiuc.edu/grad_handbook/supervision.html). and discussion of this case represents an excellent opportunity to investigate the standards at your own institution. More generally, the National Academy Press has published two booklets that address the graduate student-faculty adviser relationship from both the student's and faculty member's points of view.Committee on Science, Engineering, and Public Policy; National Academy of Sciences; National Academy of Engineering; and Institute of Medicine, Careers in Science and Engineering: A Student Planning Guide to Grad School and Beyond (1996), (http://www.nap.edu/books/0309053935/html/index.html); Committee on Science, Engineering, and Public Policy; National Academy of Sciences; National Academy of Engineering; Institute of Medicine, Adviser, Teacher, Role Model, Friend: On Being a Mentor to Students in Science and Engineering (1997), (http://books.nap.edu/books/0309063639/html/index.html) points of view.

Weil and Arzbaecher have stressed the need for regular communication in laboratories,Vivian Weil and Robert Arzbaecher, "Relationships in Laboratories and

Research Communities" in D. Elliott and J. E. Stern, eds., Research Ethics, A Reader (Hanover, N.H.: University Press of New England, 1997). and it has been my observation that candid, thoughtful communication is critical for successful relationships between students and advisers. All observations and concerns need to be shared, but at the same time there must be restraint to avoid jumping to unwarranted conclusions. To practice such candor, both must feel that each is looking out for the other's best interests as well as his own. In this scenario, it does not seem that Roger trusts Dr. Hare to look out for Roger's best interests.

Discussion Questions:

1. While the first few paragraphs of this case scenario do not present any major ethical problems, we discover by the end of the case that there have been some oversights that lead to trouble later. The situation described is not unusual and usually presents no problem. After all, a Ph.D. dissertation is supposed to demonstrate one's ability to carry out independent, original research, and the faculty members on the dissertation committee often will be less familiar with the details of the work than the student. In this case, one wonders if Roger was too independent too soon; if Hare did as much as he should have to learn about the techniques Roger was using (especially if he plans to have his research group continue using them); if the committee members were selected to give optimal guidance or to be a rubber stamp; and if an outside committee member or consultant who was more familiar with the techniques would have spotted potential problems earlier. Perhaps someone who knew more of the technical details would have been more willing to ask a question that would have led to earlier discovery of the problems, but perhaps not. Errors in procedures and interpretation can occur with no one at fault. That is part of doing research and trying to learn something new. What is important is taking reasonable precautions to avoid errors and oversights, and then acting once a problem is discovered. However, the case as a whole gives the impression that Hare is not sufficiently involved in the details of work in his lab and may not even make it a habit to review primary data with his students. Such poor lab management practices make it easier for those who work in the lab to cut corners and even falsify data.
2. Roger is being less than candid with Jessica when he fails to tell her that the two data sets are in direct conflict. However, one would think that Roger's dissertation would have been required reading for Jessica as she begins to work

on a project based on his research. Had she read the dissertation, she would be aware of the discrepancy already. Roger is choosing not to share his initial concerns. There is a very real question in science concerning when one discusses one's first interpretations of preliminary results. Often it is more prudent to stop, consider the data more thoroughly, and do a few more experiments before going public with one's interpretation.

3. At this point, Roger steps over the line to unacceptable behavior. He doesn't tell Hare about the conflict he has discovered, with Jessica's help, between his old data and those he has recently generated. He allows Jessica to continue to believe that she made some sort of error in her first experiments. Finally, Roger lies to Hare about the reason that Jessica switched projects, telling him that the first project idea was "likely to be fruitless." It seems that Roger is assuming that he made some error in the past and that if his mistake becomes known the consequences for him will be negative and serious. There are other possibilities. For instance, he is not allowing for the possibility that some unrecognized and uncontrolled variable in the experiments has changed since his last dissertation experiment, and he is precluding the opportunity to identify the variable and possibly learn more about the system he has been studying. In addition, he seems to fear a loss of credibility, respect, or even his degree. That does not seem likely in this scenario. Errors happen, but Roger's actions cause one to wonder what his view of Hare and the department are. He seems to have learned that errors are not permitted. At this point in your discussion, it would be a good idea to brainstorm Roger's options. What could he do? Whom might he contact? How could he present his new findings? Then you can discuss criteria for evaluating these options, and select what you consider to be the best one.
4. I don't think that Jessica did anything wrong, but I wonder why she did not see the conflict with Roger's dissertation data. It could indicate that she is not fulfilling her responsibilities as a graduate student to read up on the background of the research she is doing and become an independent thinker. She is a first-year student and may not have made the transition to graduate study yet.
5. Most of this point is addressed in my notes on Question 1, but I would like to have seen at least an ongoing consultation with a scientist who is experienced with the new techniques Roger brought to the lab. The responsibility to ensure that adequate expertise was represented on the committee or was available to Roger would rest first with Hare as Roger's research adviser, then with the

committee members as other faculty members responsible for Roger's training, and finally with Roger himself. As a graduate student, he also has a responsibility for his own training and a responsibility to engage in self-evaluation to determine whether he needs consultation with others to guide his research.

6. This question moves the discussion from consideration of the appropriate level of candor within a research group, to that expected in the wider scientific community. Preliminary, possibly unreliable results are not something that one talks about in the broader community. After all, the indication is that Roger did a whole body of work that supported the conclusions of his dissertation, and one does not discard those conclusions just because a novice researcher produces a disquieting result. Yes, one keeps this new result in mind and promptly follows up on it, but one need not broadcast the conflict at this point. One might argue that if Roger were asked a direct question to which Jessica's data were relevant, he should indicate that there was some recent uncertainty. However, I believe that most scientists would not consider this admission essential.
7. Once Roger has his confirmatory results, he does need to make the scientific community aware that some uncertainty will need to be tracked down. He need not discard his whole body of work or his conclusions; the problem could simply be due to one of the reagents going bad with time. But it would be best to be honest about the current uncertainty. In that way, he will not run the risk of being seen as deceptive
8. The standards for certainty are higher for a journal article than for a previously scheduled seminar. Roger probably could not control the timing of the post-doc interview relative to Jessica's experiments and then his opportunity to repeat Jessica's work. However, until it is in press, one can slow publication of a paper until any reasonable uncertainties have been cleared up. Considering that as the case says, Roger's results and conclusions did not entirely agree with the established framework of the phenomenon he was studying, it is in Roger's best interest to be as sure as possible that his data are accurately describe the phenomenon he is studying. However, even with the best practices, one can err because of uncontrolled variables or an unrecognized technical problem. Ethical scientific publication requires that one be thorough and honest in what one presents, not that one be right. Similarly, if the paper based on Roger's dissertation had already been published (probably with Hare as a coauthor) when Jessica did her experiments, then Roger and Hare have an obligation to

identify the reason behind the conflicting data before they publish a correction. In fact, depending on what Roger determines is the cause of the conflicting data, a formal correction may not be necessary.See Cases 1 - 3 in Chapter 3 of Robin Levin Penslar, ed., Research Ethics: Cases and Materials (Bloomington: Indiana University Press, 1995) for examples of situations that might not warrant formal correction. The only exception to this considered approach to the correction of the literature would be if a delay in clearing up the conflict might endanger human lives, for instance, if the data were important in the design of a clinical trial.

9. If Hare had intended to include Jessica's results in the paper to be published on Roger's dissertation, that suggests that these results are important to the conclusions of the paper and that Jessica would be included as a coauthor. Roger's actions then would also unfairly deprive Jessica of coauthorship, in addition to keeping her from a possibly productive line of research.

Key concepts: graduate student training and advising, student-faculty relationships, laboratory management.