

Neuroscience 214
Ethics and the Responsible Conduct of Research

CASE STUDIES

“The Art of Mentoring and Being Mentored”

Presenter: Keith Yamamoto, PhD
Professor, UCSF Dept of Cellular and Molecular Pharmacology;
Executive Vice Dean for Research, UCSF School of Medicine;
Vice Chancellor for Research, UCSF

Case #1: Unintentional Competitors?

As you read the scenario below, think of the following questions:

- 1. Is it okay for a PI to give 2 students projects with overlapping goals?*
- 2. How could Dr. Meanswell have done things differently?*
- 3. At this stage of the situation, what are possible solutions?*
- 4. What should Rebecca do now? Should Rebecca approach Dr. Meanswell? If so, how?*
- 5. If Dr. Meanswell does not offer a solution that Rebecca finds favorable, what are her options?*

Angelo and Rebecca are both graduate students in Dr. Meanswell's laboratory. They are in different graduate programs, but entered in the same year and started in the lab at the same time. They get along well, and Dr. Meanswell helped them each identify projects that fit into one focus area of the lab: Aiming to understand the mechanism of activation of Protein A by Protein B. Angelo's project goal is to visualize the Protein A-Protein B dimer using x-ray crystallography. Rebecca's project involves taking a biochemical approach to the question. This works well for Angelo and Rebecca, as Dr. Meanswell has a hands-off style of mentoring and meets with each student typically 1-2 times per month. Rebecca and Angelo therefore appreciate being able to discuss ideas with each other.

Mid-way through their third year, Angelo gets crystals of the dimer, and excitedly shows the crystals to Rebecca. While Rebecca is happy for Angelo, she suddenly realizes that if all goes well, he could have the structure solved within several weeks. As they hypothesize what might be found in his data, Rebecca begins to feel uncomfortable. If Angelo gets the crystal structure and can describe the interactions between the proteins, his paper will be well-received by others in their field and he will likely publish in a high-impact journal. Her biochemical assays so far have not been very revealing, and she worries that even if she eventually gets interesting results, they will be overshadowed by his publication. She suddenly recognizes that she and Angelo are in fact in competition with one another, a race to get results first in order to be published in a high-impact journal.

Acknowledgement: Cynthia Fuhrmann, PhD

Case #2: “Successful” Side Business?

- 1. It appears early on that Dr. Michaels may have low expectations of Susan, or that he is, for other reasons, relatively passive with regard to Susan's progress. What is Susan's responsibility in this situation?*
- 2. Dr. Michaels has many responsibilities as a professor and he is also running a business. What is his responsibility as Susan's supervisor? As her mentor?*
- 3. Whose responsibility is it to call committee meetings? What are the committee members' responsibilities in this situation? Should anyone monitor the supervisor-trainee relationship?*
- 4. Is it appropriate for a lab director to advocate for a graduate student who is in a difficult*

academic situation? If so, what form should that advocacy take?

5. Does Dr. Chen have any responsibility after Susan comes to talk to her?

6. Is Dr. Michaels acting reasonably in response to Susan's request for a letter of recommendation? What other options did Susan have in attempting to handle this situation?

7. Should Susan take any further actions with regard to Dr. Michaels and his lab before she decides to transfer?

Susan Smith is a fourth-year biology graduate student at Paradise University. She is conducting her research in the lab of Dr. Frank Michaels, a well-respected lab director whose research focuses on DNA transcription. Susan's work has been conscientious but unproductive. She feels stuck and has tried to discuss this with Dr. Michaels, but he tells her to just keep working. "You'll get results eventually" is all Dr. Michaels ever tells Susan.

Recognizing that mentoring is of the utmost importance in the training of graduate students, the Biology Department at Paradise University has a policy that lab directors are to act as formal mentors for their trainees. Susan has therefore relied on Dr. Michaels and has not formed a personal relationship with anyone else in the department. She thinks that Dr. Michaels is not giving her the attention she needs because of his other activities. Dr. Michaels has a personal interest in computers and computer programming. As the instructor for the department's molecular-biology course, he develops a computer program that generates a video demonstration of transcription (DNA Whiz) and uses it to teach the class. DNA Whiz is a hit with the students and with other faculty. Realizing that the program has broad appeal, and that he has a talent for programming, Dr. Michaels sets up his own business, BioProgram. He markets the program, and others he develops, commercially to faculty at other universities via the Internet, but he shares the programs with Paradise faculty free of charge.

In addition to Susan's concern that Dr. Michaels is not providing her with the guidance she needs, she often ends up answering calls to the lab about BioProgram and troubleshooting programs for Dr. Michaels' business. Along with research, exams, and work on her projected thesis, these activities have left Susan feeling overwhelmed. But she doesn't want to appear unwilling to help. Susan knows that Dr. Michaels, owing to his excellent reputation and his extensive contacts in the field, can be very helpful to her in securing a postdoctoral appointment. She also hopes that in the next year Dr. Michaels will arrange for her to make presentations within the department as well as at a national meeting.

In Susan's department, comprehensive examinations are given in part on a take-home basis. She has completed two drafts for one of her examinations, but it is being held up before approval by a particularly exacting member of the review committee, who has a reputation for unreasonable demands. She has shown her most recent draft to specialists in the field, who believe that her exam has earned well beyond a passing grade and cannot understand why it is being held up. When Susan discusses the exam with Dr. Michaels, in the hope that he will intercede in some way with the difficult faculty member, he refuses to get involved. "It is not my responsibility," he says.

To add to her feelings of neglect, Susan has not had a committee meeting to

discuss her research in more than a year, and Dr. Michaels shows no signs of calling one anytime soon. Susan is quite frustrated and has thought of talking to Dr. Evelyn Chen, a more senior faculty member in the department and another member of her committee. Susan has seen Dr. Chen work with other graduate students, and Dr. Chen seems to take an active part in fostering their graduate work and careers.

Susan decides to talk to Dr. Chen, who suggests that Susan should have a committee meeting and initiates the scheduling of one. At the meeting, the other members of Susan's committee express concern about her progress; they believe that she is not likely to finish by the end of her fifth year, her expected completion date. Susan is upset, because she believes that she has been doing exactly what was asked of her by Dr. Michaels, assuming that her work would eventually lead to a thesis. Dr. Michaels points out to the committee that he never asked Susan to answer the phone or troubleshoot the programs, that Susan did those things by her own choice and in doing so drew time away from her thesis and exam work.

Susan decides that even at this point in her graduate education she is better off starting over in another lab. She asks Dr. Michaels for a letter of recommendation. He tells Susan that he can't write a strong letter, but he would be willing to describe her accomplishments, the coursework she completed, her time in the lab, etc. Susan schedules an appointment with the dean to discuss her graduate-student career and her timetable in working toward her degree.

Acknowledgement: Responsible Conduct of Research. <http://ccnmtl.columbia.edu/projects/rcr/>

Research Ethics: Cases and Commentary, Vol 1; Brian Schrad, ed.; Association for Practical and Professional Ethics; Bloomington Indiana, 1998

Case #3: Which Mentoring Style is Better?

1. Should Amos select to do his thesis work in Dr. Slocum's lab or Dr. Cheng's. Why?
2. What information is missing that would make Amos' decision easier? What are some questions that Amos could ask about the Slocum lab, and about the Cheng lab, in order to make his decision more clear?
3. Is it possible that PI's with such different mentoring styles could BOTH produce equally outstanding and successful scientists from their labs? Why or why not?
4. If Amos decides to do his thesis work in Dr. Slocum's lab, what are some things he will need to do during his graduate school years, in order to make sure he is optimally prepared for his post-PhD career?
5. And what if he goes to the Cheng lab? What will Amos need to do while in Dr. Cheng's lab in order to make sure he succeeds in his next career step?

Amos Jones was accepted to an excellent graduate program in molecular biology. Two outstanding PI's, Claire Cheng and Patricia Slocum, who really determined the quality of the graduate program. Amos had been encouraged to train under Dr. Slocum by his undergraduate advisor.

Amos planned to do rotations in both the Cheng and Slocum laboratories. When inquiring about the research activities in the labs, Amos was told by Dr. Slocum's trainees that whether for a rotation or a thesis, Amos would be given a specific project, he would be expected to communicate results only to his direct supervisor, and he would have to give a formal presentation on the progress of his research once every two months. Much of the work had potential for commercial applications, so they noted that daily handwritten and dated entries were required, and checked, for their laboratory

notebooks. The graduate students were reluctant to describe their experiments. The pace was very intense and trainees were required to prepare abstracts for the two important national meetings every year. The trainees also noted that many famous investigators visited the lab, spending time in formal and informal scientific discussion. Trainees were allowed to examine copies of papers that Dr. Slocum had received for review and to discuss them at lab meetings. They also saw an occasional grant application that she was asked to review. The trainees expected to be in great demand for postgraduate fellowships.

Professor Cheng's students reflected on the openness of the laboratory and her constant and immediate availability. They thoroughly enjoyed broad scientific interplay within the lab and with investigators on campus and elsewhere. They indicated that they were encouraged to explore their own ideas and expected to select their own thesis project. The students gave no formal presentations except when rehearsing for meetings. Progress in the laboratory was episodic rather than steady as various concepts were explored. Although their notebooks were not specifically examined, Dr. Cheng knew about every experiment and provided constructive criticisms and suggestions. Dr. Cheng did not go to many meetings and refused to show papers she received for review to her trainees. The students admitted that they felt a little out of touch with the newest developments in the field. Although Dr. Cheng did not enjoy the same prestige and reputation as that of Dr. Slocum, the trainees said Dr. Cheng's lab was a much more pleasant and collegial environment in which to work.

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