Research Ethics Mentoring Vignettes

1. Data Selection [DATA ANALYSIS]
   - What can Dave do to find out if his performance in the lab is not up to par?
   - What role does communication among colleagues play in the scientific process?
     How do the two laboratories compare in this respect?
   - Discuss the pros and cons of the two advisors’ approaches (‘hands on’ versus ‘hands off’).
   - Should all graduate students be treated equally by their advisor(s)?
   - What are the expectations of a graduate student? Discuss how this student’s attitude compares to these expectations.

2. Data Manipulation [SELECTIVE DATA]
   - The experiment was successful on the third try; what are some reasons why the student should share the results of the first two experiments.
   - Why is negative data often considered ‘bad’ data or ‘uninteresting’ data?
   - What are some implications that result from not reporting negative results to an advisor, scientific colleagues and to society at large? Is it ever appropriate to leave data out of a paper?
   - How might scientific subjectivity be improved in this lab? What steps can be taken to ensure that full scientific disclosure is practiced?
   - Discuss the meaning of ‘reproducibility’ and its importance in the scientific process.
   - Discuss the fine line between “selling” a manuscript and misrepresenting the data?
   - How does one ensure that the pressure to publish does not interfere with scientific integrity?

3. Balancing Responsibilities
   [Note: This can also be viewed as an irresponsible professor taking her frustrations out on her student. A responsible professor would not leave the critical portions of a grant in somebody else’s control, especially with only one day left.]
   - Without assigning blame to any one person, discuss that role that both researchers played in this communication failure.
   - As the grant’s principle investigator, what could the professor have done to avoid this situation?
   - What techniques and strategies might be most useful for graduate students with major responsibilities outside of the lab, such as parenthood or a second job?
   - Discuss the importance of pursuing a research program that can be completed given the constraints of one’s schedule and commitments.
   - A successful graduate student likely will have to make some sacrifices. Provide some examples.

4. Serious Intellectual
   - What is a ‘serious intellectual’? Can hard work make up for lack of genius?
• Do you think the advisor was being critical? Differentiate between constructive criticism and insult.
• How might this student determine whether he is merely lacking self-confidence or whether he should really consider quitting?
• How much time (weeks? semesters?) should it take to answer the previous question?
• How might a graduate student's own perception influence this situation for better or for worse? Is this student internalizing what was meant to be a pop talk?
• Think about your own motivations for attending graduate school. Would you feel comfortable discussing those motivations with your colleagues and advisor?

5. Data Management
• What are three things this student could have done to avoid this situation, regardless of unforeseeable events?
• Design a lab protocol (rules and procedures) that protects data from situations such as what was depicted in this scene.

6. Data Ownership
• Under what circumstance(s) is it appropriate for Pete to take these documents with him?
• If a graduate student collects data and protocols for his dissertation research, does that material belong to the graduate student? What if the graduate student was doing work that is funded by, and included in, his professor’s grant?
• Does protocol developed by a graduate student belong to the graduate student or to the graduate student’s faculty advisor?
• If this situation occurred in an industry setting, rather than an academic one, would Pete’s behavior be judged differently?

7. Intellectual Property
• What is intellectual property, and to whom does it belong?
• Scientific research is a competitive, and often cutthroat, process, but it also depends upon the open exchange of ideas. How can these contradictory aspects of scientific progress be balanced effectively?
• When sharing ideas with an established professor, is a graduate student more likely to be taken advantage of than another professor?
• Are the concerns of the student’s professor justified? Or is his concern for his own publication record interfering with his student’s career opportunities?

8. Inappropriate Sharing of Lab Resources
• Discuss Eric’s philosophy toward graduate education. What can you say about him based on what you’ve observed in this scene?
• How would you handle the situation if you were in Jess’s shoes?
• Computer programs are expensive, and graduate students do not make a lot of money. Does this justify software piracy?
• How could laboratories and departments avoid the illegal sharing of copyrighted materials? Do you think any channels currently exist? Is so, what are they?

9. Co-authorship
• Discuss the individual contributions of Bob, Joe, Sue and Amy to the manuscript, and determine whether or not they should be included as authors.
• What are the criteria for being included as an author on a paper being submitted for publication?
• How does one determine whether a colleague should be listed as an author or simply mentioned in the ‘acknowledgements’ section?
• Should lab technicians be listed as authors?
• If a manuscript is more likely to be accepted into a top-level journal if a potential author is well known, is it appropriate to include that author if his inclusion (a) helps advance the careers of the other authors or (b) helps to expose the research to a wider audience?

10. IRB
• What is IRB, and why does it exist?
• How might this student’s lack of knowledge about university policies endanger his subjects?
• Who is responsible if human test subjects are injured or tested for reasons they object to morally? Greg? Greg’s professor? The university?
• Under what circumstances is it justifiable to do research on living subjects?

11. Plagiarism and Inappropriate Citation
• Discuss the various ways this graduate student might deal with this problem. Is there more than one adequate solution?
• Is a professor more likely to trust a post-doc over a graduate student?
• Discuss how lab tenure might influence interaction amongst lab members. Does the fact that Bob is a post-doc change the way this situation should be handled?
• Assume that Bob and this graduate student have published together in the past. Will the graduate student’s career be tarnished if Bob becomes known as an academic fraud?
• When is it proper to use citations in scientific writing?
• Is the peer-reviewed editorial process employed by most well known journals the best approach available? Discuss how this process works and consider the pros and cons of each step from submission to publication (e.g., variance in expectations from one reviewer to the next, time from submission to publication, politics of anonymous reviewers, etc…).

12. Conflict of Interest
• How should Tina handle this situation? Does she have a choice or not?
• Is Tina’s professor abusing her power? What else might you need to know about this situation to determine the severity of the conflict of interest?
• Scientific circles are small, and Tina will need a good letter of recommendation from her advisor to secure a post-doc. Should this factor influence Tina’s decision?
• How do the expectations for a graduate student and a lab technician differ?
• Discuss the fine line a graduate student may encounter between being helpful and being used.
• In what ways may the behavior of Tina’s professor come back to haunt her in the future?

13. Choosing a Lab [CHOOSING A MENTOR]
• Should this student consider asking the two professors to serve as co-advisors?
• What are the pros and cons of spending a significant period of time (a semester or a year) doing lab rotations to ensure that a proper mentor and research area are chosen?
• What is more important to consider when choosing a lab, “chemistry” among lab members or excitement about the research?
• How important are your research interests to you? Did personal interactions influence your decision to attend grad school? Do you anticipate that they will impact which lab you choose?

14. Problems with Mentor
• What can Bob do to ensure that he is not left wondering what Professor Carson thinks about his research?
• Assume that Bob asked you this question? Would you be honest with Bob if Professor Carson’s behavior were justified?
• How might Bob use other faculty members to address this problem?
• How much of this student’s problem is ‘his’ and how much may be that of the professor?
• List as many problems as you can that you as a graduate student may face. How many of these problems are truly out of your control as a graduate student?

15. Sexual Harassment
• What constitutes sexual harassment?
• What can be done to ensure that all members of a lab are able to work without the fear of harassment?
• What can the female student do about this problem? What resources are available to her at the university?
• Should the female worker bring this concern to the male workers’ attention, or would it be better to seek outside assistance?
• Would the proper response differ if the men were faculty members, as opposed to students or technicians?
• What sorts of discussions should be avoided in the lab setting? What topics (whether they are ‘obscene’ or sexist or otherwise) should be off-limits?
• Should the sensitivities or opinions of one lab member dictate lab policy?
16. Disability

[QUESTION: WHAT IS THIS STUDENT’S RELATIONSHIP TO MIKE?]

[Note: The following assumes that the young woman is Mike’s TA.]

- Are the TA’s concerns legitimate or is she behaving irrationally?
- What sort of training might help this TA to become more effective when teaching disabled students?
- If the demands of properly teaching a disabled student involve an increased workload is it the TA’s responsibility to meet these demands? Should Dr. Lerner spend the extra time teaching the student?
- What sorts of services are available on campus to provide assistance for disabled students?
- ***(Tangential question that is not addressed in any vignettes but is a very important issue that TA’s must consider): How does a TA balance the competing demands of teaching and research? Should a TA prioritize one over the other? When, and why?***

[Note: The following assumes that the young woman and Mike are graduate students in Dr. Lerner’s lab.]

- Are the concerns of this graduate student legitimate?
- What approach or type of training might help this student to interact more comfortably with Mike?
- If this graduate student is not able to get past her issues with Mike, what should be her course of action?
- Generally speaking, is it the job of a faculty advisor to ensure that all members in the lab get along well with each other?
- How do you decide whether Mike’s disability is or is not interfering with this student’s work? Could this simply be a case of discrimination?

17. Cheating

- What advice would you give the student? Should he tell the professor about Sam’s behavior?
- When it comes to the issue of cheating, do professors trust grad students more than undergrads? Why, or why not?
- Will Sam’s habit of cheating ever catch up to him if he pursues a career in academics or industry?
- At the graduate level, is it the job of the professor to look out for cheating students?