Workshop on Responsible Conduct of Research:

Today’s topics:

(1) Peer Review and (2) Mentorship

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Sources:
National Academy of Sciences (2009) On Being a Scientist
Obligations to:

1. Other scientists
2. Your own career
3. Public

from: On Being a Scientist, 2009, NAS
Skills to be learned:

Recognizing issues
Reasoning through dilemmas
Understanding your responsibilities
Planning and taking action
Mentoring:

1. Distinction between mentoring and “advising”
2. What considerations should be used when choosing a mentor, advisor or research group?
3. What are the responsibilities of the mentor?
4. What are the responsibilities of the mentee?
5. What are the “interests” of the mentor?
6. What are the “interests” of the mentee?
7. What can be done in the event of conflict?

Adapted, with additions and modifications, from On Being A Scientist, NAS 2009
The basics of peer review:

Responsibilities of authors
Responsibilities of reviewers
Responsibilities of editors

Mentoring in peer review? Role of students/postdocs.
Analyzing case studies:

• Identifying the people with a stake in the outcome
• Identifying ethical issues and points of conflict
• Identifying obligations of the various parties
• Determining possible solutions, and the consequences of each
• Choosing and justifying better/best solution
Prof. Edna Claremont is a new Assistant Professor in Computer Science. She receives many requests to review journal articles, and typically agrees to do them because of the need for good reviewers, and because she knows that a record of reviewing for journals is important to her professional career. A request arrives to review a paper which describes new computer algorithms to generate 3D images on video screens, the very topic of Edna’s research. She agrees to do the review. When she starts reading the paper she discovers to her dismay that the authors have solved an important problem whose solution has eluded her for the past two years. She knows that publication of this paper will set her back in the competition for success, visibility and grant support.

Edna combs the paper thoroughly and finds a number of areas where the authors have not done a stellar job. She recommends that the paper receive “major revision” including performing several new tests of the algorithm that will undoubtedly take the authors months to complete.

Edna feels she has been scientifically accurate, since the flaws she pointed out are legitimate and the authors really should fix them.

1. Are Edna’s actions justifiable? What other options did she have?
2. What is the role and what are the obligations of the editor?
3. What should (could) the authors do when they receive the reviews?

EK
Milton, a senior level grad student, is seen less and less during the day by his mentor and other members of the lab. It becomes apparent to the mentor, Prof. Wise, that Milton is working very long hours during the evening and nights when most other lab workers aren’t there. This persists for several weeks. Prof. Wise approaches Milton and asks that he spend more time during “standard working hours” in the lab, arguing that interactions with him and other lab members is important and that it is best for all to talk science regularly. Milton says he can work much more efficiently when fewer people are around. He cites that fact that a piece of equipment he needs for his research is continually busy throughout the day, thus forcing him to work unconventional hours. The conflict continues and grows tense.

1. Does Milton have legitimate reasons for working late hours? Is his advisor being reasonable?
2. What obligation does Milton have to his mentor and lab associates?
3. How are they going to resolve this?

Anna, a postdoc in Dr. Susan B.’s laboratory, has just had a manuscript accepted for publication in a prestigious research journal, conditional on a few important changes. Most importantly, the editor has requested that she significantly shorten the methods section to save space. If she makes the requested changes, other researchers may not be able to replicate her work. Asked about the situation, Dr. B. recommends that Anna go ahead with the changes. After all, if other researchers want more information they can always get in touch. She remains concerned that an inadequate explanation of her methods could lead other researchers to waste time and valuable research dollars attempting to replicate her work.

Should Anna make the requested changes? Should she be concerned about providing inadequate information to colleagues? Is reducing detail in methods sections a reasonable way to go about saving valuable space in journals? How can Anna get definitive answers to these and other questions about the responsible conduct of research?

From: On Being a Scientist, NAS, 2009
Andre, a young assistant professor, and two graduate students have been working on a series of related experiments for the past several years. It is time to write up the experiments for publication... They could write a single paper with one first author that would describe the experiments in a comprehensive manner, or two shorter papers so that each student could be a first author. Andre favors the first option, arguing that a single publication in a more visible journal would better suit all of their purposes. This alternative also would help Andre, who faces a tenure decision in two years. Andre’s students strongly favor two papers. They argue that one paper encompassing all the results would be too long and complex. They also say that a single paper might damage their career opportunities because they would not be able to point to a paper on which they were first authors.

1. How could Andre have anticipated this problem? And what sort of general guidelines could he have established for lab members?
2. If Andre’s lab or institution has no official policies covering multiple papers from a single study, how should this issue be resolved?
3. How could Andre and the students draw on practices within their discipline to resolve this dispute?
4. If the students feel that their concerns are not being addressed, to whom should they turn?
5. What kind of laboratory or institutional policies could keep disputes like this from occurring?
6. If a single paper is published, how can the authors make clear to review committees and funding agencies their various roles and the importance of the paper?

From: On Being A Scientist, NAS, 2009
Joseph came back from a brief summer vacation convinced that he would be able to finish up his Ph.D. in one more semester. Though he had not discussed the status of his thesis with his adviser or any other member of his thesis committee since the spring, he was sure they would agree that he could finish up quickly. In fact, he had already begun drawing up a list of companies to which he planned to apply for a research position. However, when his research adviser heard about his plans, she immediately objected. She told him that the measurements he had made were not going to be enough to satisfy his dissertation committee. She said that he should plan to spend at least two more semesters on campus doing additional measurements and finishing his dissertation. Joseph had always had a good working relationship with his adviser, and her advice had been very helpful in the past. Plus, he knew that he would need a good recommendation from her to get the jobs that he wanted. But he couldn’t help but wonder if her advice this time might be self-serving, since her own research would benefit greatly from the additional set of measurements.

1. Should Joseph try to change his adviser’s mind? For example, should he review what his measurements already show and compare that with what the new measurements would add and then ask his adviser to reconsider?
2. Should Joseph talk with other members of his thesis committee to get their opinions?
3. What actions could Joseph have taken earlier to avoid the problem?
4. What actions can Joseph take now to avoid future disappointment?

From: On Being a Scientist, NAS, 2009
Becky Archer is the advisor for several doctoral students. One of the students, Jennifer Walker, just came up with some remarkable new data on the environmental causes of autism, a major breakthrough. At Prof. Archer’s request, Jennifer repeats and confirms her analysis.

Prof. Archer then approaches another student in the lab, Tim McDonald, and asks him to repeat the analyses in order to double check the results. Prof. Archer wants to be totally sure that Tim’s work will be totally independent of Jennifer, so she tells Tim not to discuss with Becky what he is up to.

1. Are Prof. Archer’s actions justifiable?
2. What should Tim do?
3. What alternative courses are available?

Dr. Vijay Ramachandran is editor of the journal “Germs”. He receives a letter from Dr. Ebenezer Jones. Dr. Jones had requested bacterial strains from the author of a paper published in the journal. The author of that paper, Dr. Lara Ellis, refused to send the strains on the grounds that Dr. Jones has engaged in research that has in the past been linked to development of agents for biological warfare.

Dr. Jones, however, points out that the policy of the journal is that authors must make raw materials available to scientists who wish to study them for noncommercial use.

What should the editor do?
What should Lara do?

Discussion points for “Andre”:

Contributions to a scientific field are not counted in terms of the number of papers. They are counted in terms of significant differences in how science is understood. With that in mind, Andre and his students need to consider how they are most likely to make a significant contribution to their field. One determinant of impact is the coherence and completeness of a paper. Andre and his students may need to begin writing before they can tell whether one or more papers are needed. Parts of the research can also be broken out for separate publication with a opportunity for different first authorship. In retrospect, Andre and his students might also ask themselves about the process that led to their decision. How could they have discussed publications much earlier in the process? Were the students led to believe that they would be first authors on published papers? If so, how could that influence future policies or procedures in the lab?

From: On Being a Scientist
Discussion points for Joseph:

Differences of opinion about when a dissertation is finished or almost finished are a common source of tension between Ph.D. students and their advisers. Good communication throughout the preparation of a dissertation is essential to avoid disappointment. Meetings should be held regularly to review progress and discuss future plans. If a student has difficulties discussing these issues with a thesis adviser, as Joseph did, the other members of a thesis committee should be willing to intervene to make sure that expectations are identified and made clear to all parties.

From: On Being a Scientist, NAS, 2009