

**Responsible Conduct of Research and Professional Ethics:
Interactive Seminars and a Continually Updated Series of Mini Case Scenarios**

Irving P. Herman
Department of Applied Physics and Applied Mathematics
Columbia University
New York, NY, USA

May 14, 2018 (V158)

Responsible Conduct of Research and Professional Ethics Seminar

At Columbia University, applied physics, applied mathematics, and materials science and engineering doctoral students and applied physics undergraduate students participate in a ~two hour seminar that explores the responsible conduct of research and ethics of professionalism.

The seminar has three components. First, several recent egregious public examples of plagiarism, publication retraction, cheating, data falsification, gaming college rankings, and so on are introduced. These are updated each time the seminar is presented.

Second, the students are introduced to the core issues in responsible conduct of research, including data and research, authorship, content of papers and theses, and preparing and reviewing papers and proposals, and professional ethics, including issues in employment, conflicts of interest, confidentiality, and CV accuracy, and to different ways of addressing them. Other areas, such as society, industrial and medical ethics, are not covered. The words of Richard Feynman from his “Surely You’re Joking, Mr. Feynman!,” [Feynman] are used to emphasize the importance of honesty in scientific research, as is the well-documented research misconduct of Jan Hendrik Schön [Schön].

Several basic points are raised in this section:

There are some clear-cut issues and rules about what is right and wrong in research and in professional interactions. There is also much gray area. Knowing these rules is important.

What is right? Do you really know what is right? Are you, in fact, right? How can you learn what is right? Have you been wronged or are you in fact wrong thinking that you have been wronged? With whom should you discuss the situation?

When is an issue an ethical one? When is it just a mistake or misunderstanding or a legitimate difference in opinion? When is it sloppiness, which is itself unprofessional if it is deemed to be “reckless”, or an honest mistake made by a careful person (or due to bias [Bias])? When is an issue minor or trivial and when is it major and significant-and worth following up on? When is something a fraud or hoax, and when is the issue really difficult scientific reproducibility? Is there just right and wrong, or is there a threshold for unethical or

irresponsible behavior? When is it just a matter of style or local convention? Sometimes the best response is a question asking for more details about the situation.

What is the threshold for pursuing a complaint, either in a formal or more casual manner? When is something really an ethical issue and when is it a “power” issue between people in different positions (employer/employee, professor/student)? How do you resolve real ethical issues in light of a “power” asymmetry? Should you pursue a discussion (first and then later) with a peer, advisor, ombudsperson/conciliator, or a department chair?

There is also a big difference between “giving the right answer” to an ethics-related question in an ethics training exam or at an ethics seminars and confronting the situation in the real world.

There is a wide range of ethical situations in professional situations outside of the range of the purview of this seminar, for example, ethics in engineering (am I constructing a bridge or building that I know may not be safe because of budgetary constraints?), medicine (am I ignoring the results that the show deleterious side-effects of an otherwise-promising drug?), computer/privacy ethics, ethics in business, and so on. Some of these more technical-related areas are addressed in the cited reference material.

It is also very instructive to discuss these points in the context of case scenarios. We can examine real case histories, as well as fictionalized versions of real cases and totally fictional cases. Both types of these fictional scenarios are presented in the below compilation.

The third part of the seminar is an extended give-and-take inspired by several of the author’s >200 one-sentence, case scenarios, presented below (along with >100 variations of these), that span the range of ethics covered by the seminar, which are presented below. These interactions should last for most of the presentation, for a two-hour long seminar. These mini case scenarios are fictionalized versions of well-known public cases, the author’s experience base, and published case histories that are based on real events or fictionalized cases constructed for instruction. Discussion is also fostered by using plots from TV shows, such as “House” [House] and “Bones” [Bones] (and also “Leave it to Beaver” [Beaver]), and from real cases, such as the Schön case and the (supposedly humorous) example of the famous Alpha-Beta-Gamma publication [Alpha-Beta-Gamma]. Historical and fictionalized examples of misconduct by both junior and senior scientists are presented. Also, increasingly important areas in ethics are raised for discussion, including the use of open and web resources and intellectual property.

For most scenarios, there has been general agreement of what is right and wrong, and the seminar leader can help explore issues more deeply, including ways of resolving problems. There has been some disagreement among seminar attendees (and the seminar leader) in very specific areas, such the responsibilities of employees and employers.

Copies of this seminar presentation are available from the author at [Herman-Seminar].

This approach can be easily adapted to shorter and longer seminar periods. For more details about the seminar, see [Herman-Transactions]; also see [Overviews].

Please do not transmit all or any part of these notes to anyone else or anywhere, either as they are or in modified form.

Mini Case Scenarios: Responsible Conduct of Research and Professional Ethics

Several potential case scenarios and issues are raised below. Many are based on real examples, including many of the seemingly more unbelievable examples, which I have seen or heard about from colleagues, or have read about in published sources. Although most of the situations described are uncommon, some are more common than you may think.

These case synopses are presented in a very concise matter (in one, sometimes run-on sentence). Sometimes details can be added that could make the case clearer or more complex or, in fact, change your opinion about the circumstance totally. They are listed in several broad, and sometimes overlapping categories, and in no specific order. Variations in the theme of a given mini case scenario are presented as parts a, b, c, ... Some of the cited cases are presented in more detail and with more complexity in the references (and in particular in the website developed at [Case]). Also see the NAS/NAE publication, *On Being A Scientist* [Being-A-Scientist], for more case studies, and [Overviews]. In each scenario, the “he/she” in “What should he/she do?” refers to the subject at the beginning of the prior sentence. (Masculine and feminine pronouns are used in alternating sections.)

These scenarios can be used to foster discussion at an ethics training seminar. When variations in a given scenario are given, they can be presented sequentially during the seminar. Alternatively, this compilation can be used for self-study.

Please do not transmit all or any part of these notes to anyone else or anywhere, either as they are or in modified form.

Data and Research

Data validity and quality

1. A student sees that all of the data on a curve fit well except for one. What should he do?
- 2a. A student does the same experiment on five successive days, and sees the essentially the same results on three of them and the same, but now very different, results on the other two days. What should he do?
 - 2b. A student finds the reactions rate for eight of the ten solvents tested fall on a straight line versus solvent polarity, while those for the other two fall way above the line, and wonders whether those two deviant points should be plotted, ignored because they do not match expectations, or remeasured (either those two solvents alone or all ten of them again). What should he do? [Kovac]
3. After returning from a neutron facility, a graduate student plotted his data alongside theory and saw two data points that were very far from the curve, and wondered whether it would be okay to throw out those two points because they must have been taken during power fluctuations or due to other unexplained experimental problems, and because they could not go back to make

new measurements and a competing group was about to submit a paper that showed good agreement with this theory. What should he do? [Being-A-Scientist]

4a. A graduate student wonders whether it would be okay to use data from different samples in one graph. What should he do? [Schön]

4b. A graduate student wonders whether it would be okay to use data from different samples in one graph, selectively choosing data points to get a cleaner fit and one that is more like the anticipated result. What should he do? [Schön]

5a. A graduate student worries that his data do not agree with the results published by famous scientists. What should he do? [Schön]

5b. A graduate student worries that his data do not agree with the results published by famous scientists and, fearing his advisor, wonders whether it would be okay to modify the data a bit to achieve compliance. What should he do? [Schön]

6. After not getting the results he and his adviser expect in nine tries, he finally gets the expected results on the tenth try and wonders whether he should risk checking the results in an eleventh try. What should he do?

7a. After spending a long day taking data, a student thinks it is possible that he made a mistake sometime during the day, and wonders whether he should throw out all the results of the hard work of that day and repeat the experiment the next day. What should he do?

7b. After spending a long month taking data, a student thinks it is possible that he made a mistake sometime early during that month, and wonders whether he should throw out all the results of the hard work of that month and repeat the experiment the next month. What should he do?

7c. After spending a long day taking data, a student thinks it is possible that he made a mistake sometime during the day, and wonders whether he should throw out all the results of the hard work of that day and repeat the experiment—but he would have to wait six months before having access to the experimental facility again. What should he do?

8. A student knows his work is interesting and important, but since it is not ground-breaking it is not likely that his work will be checked or repeated, and so he wonders whether it is really important to be ultra-careful. What should he do?

9. A professor hears from a junior graduate student that a signal increases when a variable is changed, but he is sure that it should decrease. What should he do?

10a. A researcher notices that a paper is being published using data he had uploaded on a common data site for open access and use, but which permitted submission of manuscripts using these data only after an embargo date that hadn't occurred yet. What should he do? [Paper-Retracted]

10b. A researcher freely uses data from a common source and wonders whether it would be okay to submit a manuscript using these data even though the embargo date has not yet occurred, because no one would ever know. What should he do?

10c. A researcher wonders why the person who posted data on a common site is so angry that he violated the terms of an embargo on manuscripts using those data, an embargo that he did not know about. What should he do?

Data fabrication

1. A graduate student suspects a fellow student of fudging results, and wonders if it would be right to design a collaborative project that would be designed to expose this student. What should he do? [Sames]

2a. A graduate student sees that another graduate student was not making the measurements he claimed to be making. What should he do? [Being-A-Scientist]

2b. A graduate student sees that another graduate student was not making the measurements he claimed to be making, and is worried about telling his professor because that other student was one of the professor's favorite students. What should he do? [Being-A-Scientist]

3. An undergraduate working in a research group as a technician notices that the trend claimed by the professor for data in a spreadsheet is not supported by that spreadsheet, and after telling the professor and sending him the spreadsheet, receives the spreadsheet back with altered entries that now support that claimed trend. What should he do? [Poehlman]

4a. A graduate student is told to reproduce the experiment done by a graduated student as preliminary work for a more advanced experiment, and repeatedly cannot reproduce it. What should he do? [Scientific reproducibility] [Sames]

4b. A graduate student is told to reproduce the experiment done by a graduated student as preliminary work for a more advanced experiment, and repeatedly cannot reproduce it, and tells the professor, who then becomes very annoyed. What should he do? [Scientific reproducibility] [Sames]

4c. A professor tells a graduate student to reproduce the experiment done by a graduated student, as preliminary work for a more advanced experiment, and has been told by the student that he has tried the experiment many times and cannot reproduce it. What should he do? [Scientific reproducibility] [Sames]

5. A researcher cannot reproduce the experimental results published by somebody at another institution. What should he do? [Fraud], [Polywater in Being-A-Scientist]

6. After establishing a collaboration with equally prominent Scientist B, Scientist A hears that there might be something amiss with the scientific ethics of his collaborator—perhaps related to fraudulent, exaggerated, or massaged data—and wonders how to (or even if to) approach Scientist B about this. What should he do?

7a. The scientific department head at an industrial lab hears that there might be something amiss with the scientific ethics of one of the scientists in his department. What should he do?

7b. The scientific department head at an industrial lab hears that there might be something amiss with the scientific ethics of one of the scientists in his department, and he is also a frequent collaborator of this scientist. What should he do? [Schön]

7c. The scientific department head at an industrial lab, who had signed off on a manuscript written by one of the scientists in his department, learns that this scientist has been accused of irresponsible behavior concerning the work in this manuscript and is worried that he would be held responsible too. What should he do?

8. A graduate student wonders when it would be okay to change a few data points in the data processing program because the observed curves do not show the expected peaks and if he did that less than 1% of all of the data would be affected. What should he do? [Schön]

9. An undergraduate student who just started working on a research project in a professor's research lab and is taking data wonders if it would be okay to make up some of the data because he knows that in undergraduate teaching labs half of the students fudge data and since no one complained about that, why should it be different here? What should he do? [Schön, Cheating]

10. After receiving the reviewer's comments on their joint paper, a fellow author revised the manuscript to address the comments by changing some of the data, but you wonder whether this change was proper (and not simply correcting an error). What should he do? [APS]

11a. A scientist notices that a previous scientist in his group published several sets of accumulated data, but cannot find any record of one of these sets of data within the extensive sets of data obtained and recorded in the group computer. What should he do? [APS]

11b. A scientist notices that a previous scientist in his group published several sets of accumulated data, but cannot find any record of one of these sets of data within the extensive sets of data obtained and recorded in the group computer, and he is warned by a more senior scientist in the group that this is very serious. What should he do? [APS]

Raw data and trust

1. A professor asks to see the raw data taken by a student, and is challenged by the student, "Why do you want to see it? Don't you trust me?" What should he do?

2a. A graduate student is shocked when his advisor wants to see the raw (primary) data, and not secondary data (imported into a data processing code) and wonders whether he is being trusted. What should he do? [Schön]

2b. A graduate student is shocked when his advisor wants to see the raw (primary) data, and not secondary data (imported into a data processing code) and wonders whether he is being trusted, and how can this matter anyway since there were no witnesses to his taking the primary data. What should he do? [Schön]

3. A professor asks a student to give him the source code for a calculation or simulation, and is challenged by the student, “Why? Don’t you trust me?” What should he do?

4. A group leader in an industrial lab is a collaborator on several papers with a more junior scientist in his group who is doing a prolific amount of ground-breaking work, and since he is not in the lab with this scientist during experiments and never sees the raw data, wonders if he should insist on seeing the raw data and risk insulting this rising star. What should he do? [Schön]

5. Scientist A is collaborating with equally prominent Scientist B, and feels awkward asking to see the raw data taken by Scientist B even though he thinks it is important to make sure his collaborators are being scientifically responsible. What should he do?

6. A professor is concerned about the legitimacy of the work of one of his students, and during questioning the student admits to fabricating data in their current study, but swears that all the data in their earlier publications are legitimate. What should he do?

7. Just as he is about to publish a theory, a scientist learns that the data his theory was based on (and which it predicts) were faked. What should he do?

Record keeping

1. A professor who learns that a student is keeping a very sloppy lab book (from which the nature of the experiments cannot be reconstructed) (or no lab book at all), tells the student that keeping a complete lab book is essential, and the student responds, “Don’t worry, I remember it all.” What should he do?

2. A professor learns that a student is ripping pages out of his lab book. What should he do?

3. In reviewing a student's lab notebook, a professor notices an entry on a day that he is sure the student was not even on campus. What should he do?

4. A graduate student is angry with his advisor because his advisor said that all of the data he took the previous six months are invalid and cannot be used for his thesis because they were not documented in a lab book. What should he do? [Schön]

5a. A student has not been keeping a good lab book and is concerned that his professor will be upset about this, and wonders whether it would be proper to re-create his work this past month in the lab book from memory and from random notes in the lab. What should he do?

5b. A student who had re-created his lab book from memory and notes learns he is about to be a co-inventor on a patent disclosure that is based on work in his lab book, and is worried that his re-creation of the lab book could lead to legal difficulties. What should he do?

6. A student wants to take his lab book with him after graduation, but the professor objects to this. What should he do?

7. A researcher for a company claims to have obtained some results on site (and has a dated lab book showing this) on a day that the company asserts he was not even on site? What should he do?

Questionable motives and approaches

1. A graduate student is accused by his advisor of scientific misconduct after the results in their joint publication were questioned by other researchers. What should he do?

2. A supervisor at a national laboratory sees that workers took and lined up the stored plutonium rods so they could take a nice photo of them, and is scared of the consequences of having so many rods placed so close together. What should he do? [Plutonium photo, sloppiness]

3. One scientist suspects that another scientist is slanting his work to accept either positive or expected results? What should he do? [Bias], [Pushing for specific results]

Authorship

Proper authorship

1. A student thinks she should be first author on a paper, but is not. What should she do?

2. A student whose last name begins with “Z” is upset because in his group the convention has always been to list the authors alphabetically in papers (from A-Z of the last names), while in most other groups on campus the convention is to put the lead (junior) person as first author. What should she do?

3. A graduate student is upset because her professor has designated her as the second—and not first—author on a paper for which she took most of the experimental data—and this could hurt her job prospects, while the first author is another graduate student who is an excellent writer and who wrote most of the paper. What should she do?

4. A graduate student is upset because so many other students have been added as authors on a paper, who have clearly worked on it but less than she has, and this “diluted authorship” could hurt her job prospects. What should she do?
5. After spending 30 minutes making one measurement for a research study, a student notices that she has been acknowledged on a paper written describing the overall research study but has not been named an author, as she had expected. What should she do?
6. A professor thinks a person minimally involved with a research topic does not really deserve to be an author on a paper concerning this topic, but is afraid this person would complain loudly if omitted as an author. What should she do?
- 7a. A graduate student leading a project learns that a high school student has been added as an author (and perhaps as first author), even though the student was either not involved or minimally involved in the research, because it was thought this inclusion would help promote their program and level of research funding. What should she do?
 - 7b. A professor wants to add a high school teacher working in her lab over the summer (and who made only modest contributions to the effort) as an author to a paper because it would indicate (to some) that her program of teacher research in the summer is a success, but is troubled with setting a low bar for authorship. What should she do?
8. A graduate student, who developed a code (or constructed an apparatus) and used it for a few papers for her own thesis, notices that it has subsequently been used by students after she graduated and she, to her dismay, was not been added as an author in the paper reporting these results. What should she do?
9. A professor is asked by a student working a project to tell her what is the minimal amount of work she needs to do to qualify as an author on a paper. What should she do?
10. A professor, deciding on the authorship of a paper, thinks a former undergraduate is a worthy author, but is unable to contact her for her permission to include her as an author and for manuscript approval. What should she do?
11. A professor, deciding on the authorship of a paper, thinks an undergraduate working in the lab on the project of the paper did the technical work requested of her, but doubts that her involvement rose to the level of authorship. What should she do?
12. A student thinks that all participants in a research project should have equal say in deciding everything relating to a paper, including authorship, while the group leader thinks that she herself should make all final decisions. What should she do?
13. A graduate student is asked by her advisor to write a review article (book chapter), hands her drafts (and makes revisions based on her advisor’s suggestions), and later learns that her advisor did not include her as a co-author in the submitted manuscript, and when confronting the advisor about this is told not to worry about it because it is was a just a learning exercise and that she

will get to be a co-author on other publications. What should she do? [Whose Manuscript? in Gunsalus]

14. Months after a graduate student gave a talk at a meeting about a new technique and discussed it in detail with a professor attending the meeting, she notices that the professor has just published a paper that utilized this technique—but that did not cite even her abstract from the meeting. What should she do? [Being-A-Scientist]

15. At her professor's request, a student gives a sample she synthesized to another group to use in their study, and later finds that this group wrote a paper that does not give her (and her professor) authorship or even an acknowledgment. What should she do?

16. A professor conceives of an experiment and makes arrangements to receive the needed material, and later learns that the material arrived on a day she was absent and then her colleagues performed the experiment themselves and published a paper on it without giving her any credit. What should she do? [Fermi]

17. A professor learns that a former graduate student thinks she should be an author on a paper for which she did a preliminary experiment suggested by the advisor, but did not want to continue, so it was continued by someone else. What should she do?

18. Long after a researcher gave a colleague a great idea, with the understanding that the colleague would do the experiment and (if the results warranted it) write the manuscript, and be the first author, the researcher is frustrated because after doing the successful experiment the colleague never wrote the manuscript and now she now wants to write the manuscript herself and be first author. What should she do? [HMS]

19. A graduate student, who had answered her roommate's basic questions about the statistical methods that would be most appropriate for the latter's research, thinks she deserves to be an author on the resulting paper, but her roommate disagrees. What should she do? [HMS]

20a. A graduate student feels that she has been denied credit for a co-discovery with a professor, and feels she deserves joint authorship on a paper. What should she do?

20b. A graduate student feels that she has been denied credit for a co-discovery with a professor, and though she has received joint authorship on a paper, feels she deserves income from a patent for the discovery. What should she do?

20c. A graduate student feels that she has been denied credit for a co-discovery with a professor, and though she has received joint authorship on a paper and income from a patent for the discovery, feels she should have been co-awarded the Nobel Prize with her advisor for this discovery. What should she do? [Credit-Antibiotic]

20d. A graduate student feels that she has been denied credit for a co-discovery with a professor, and though she has received joint authorship on a paper and income from a patent for the discovery, feels she should have been co-awarded the Nobel Prize with his advisor for

this discovery even though the lab book with her work is (suspiciously?) missing. What should she do? [Credit-Antibiotic]

21a. A student (or postdoc) gives her advisor to the solution to a problem and learns later that the advisor pursued it and published it with the student given an acknowledgement but not authorship, and the student is unhappy. What should she do? [APS]

21b. A student (or postdoc) gives her advisor to the solution to a problem and learns later that the advisor pursued it and published it with the student given an acknowledgement but not authorship, and the student is unhappy and remembers that she wrote up the solution in her lab book. What should she do? [APS]

22. An author on a paper is angry because her advisor made another student first author to help that person get a good job, but her own contribution was greater. What should she do?

Questionable addition of authors

1. Someone not involved with a paper notices that her name has been added to it (presumably to increase the odds of manuscript acceptance because she is famous). What should she do?

2. A graduate student is upset because her famous advisor wants to add a third (also famous) author to the paper, who never worked on the project at all, because the author list would then be humorous, but she objects because all would think the work was done by the two famous scientists and not by her. What should she do? [Alpha-Beta-Gamma]

3a. A graduate student is asked by her advisor to work with another graduate student to write the draft of a paper, and in drawing up the author list this other student wants to add a famous scientist not involved in the work as an author, so the paper would more likely be accepted by a top journal. What should she do?

3b. A graduate student is asked by her advisor to write the draft of a paper, and in drawing up the author list her advisor says she wants to add as an author someone not involved in the work but who is having a fight with their group, so the added author would not be asked to review the manuscript. What should she do?

4a. A professor wonders if it would be wrong to add her name to a research paper being written by a company because it would help them promote their results. What should she do? [Ghostwriters] [Beaver]

4b. A professor wonders if it would be wrong to add her name to a research paper being written by a company, who funds other work she is doing but not work in this area, because it would help them promote their results. What should she do?

4c. A professor wonders if it would be wrong to add her name to a research paper being written by a company, who funds collaborative work she is doing in this area, even though

she does not agree with how they are presenting and interpreting the data. What should she do?

5a. A research scientist is angry because her manager wants to be an author on a paper, but did not work on the project aside from bringing in the funding to do the work. What should she do?

5b. A graduate student is angry because her professor wants to be an author on a paper, but did not work on the project aside from bringing in the funding to do the work. What should she do?

6. A student is upset because it is the custom of her group (or specialty) to include all group members as authors in all group papers, supposedly because their activities in the group generally contribute in some way to all group research. What should she do?

7. A postdoc learns that his professor wants to make his friend, a famous person in the field who contributed essentially nothing to the paper, as an author on their paper because it could help the paper being accepted, and thinks this is wrong. What should she do?

8. A scientist learns that in the company he just joined it is customary to add lab technicians as authors on papers and thinks this is wrong. What should she do?

9. A scientist learns that in the company he just joined it is customary to add department managers as authors on papers and thinks this is wrong. What should she do?

Proper involvement of authors

1a. A professor notices the on-line publication of a paper by a former student (with the professor listed as an author), but was never even informed by the student that a paper was being prepared or submitted. What should she do?

1b. A professor finds the on-line publication of a paper by a former student (with the professor listed as an author), after seeing a recent version of her former student's CV and then being told by that former student that no such manuscript had been written or submitted. What should she do?

1c. A professor notices the on-line publication of a paper by a former student (with the professor listed as an author), but was never even informed by the student that a paper was being prepared or submitted and believes that some of the data in the paper are not real. What should she do?

2a. A scientist and her colleague cannot agree how to publish their joint results, and later the scientist learns that the colleague has published their work, without consulting her, and has included her as an author. What should she do?

- 2b. A scientist and her colleague cannot agree how to publish their joint results, and later the scientist learns that the colleague is about to publish a single-author review article that includes this unpublished, uncited work, and has cited her for general collaborations in the acknowledgments. What should she do?
- 2c. A scientist and her colleague cannot agree how to publish their joint results, and later the scientist learns that the colleague has published a single-author review article that includes this unpublished, uncited work, and has cited her for general collaborations in the acknowledgments. What should she do?
3. A scientist describes an idea to a colleague who at first dismisses it, but later, unknown to her, embraces it and then publishes the results under the scientist's name. What should she do? [Wheeler-Kruskall]
4. A professor learns (as a result of an automatic e-mail sent by the meeting organizers to all authors) that an undergraduate who worked in her lab the previous summer submitted an abstract to a meeting to present their joint work, without any consultation or permission. What should she do?
- 5a. A collaborator learns that the lead author on a paper has decided that the data she contributed to a project will not be used in the manuscript being written and since she contributed little else to the article, she will no longer be an author. What should she do?
- 5b. A collaborator learns that the lead author on a paper has decided that the data she contributed to a project will not be used in the manuscript being written and even though she contributed little else to the article, she will still be an author. What should she do?
- 6a. A student is unhappy that her advisor wants to delay publication and wants to submit a manuscript, with the advisor and others as authors, but without showing it to her advisor. What should she do? [APS]
- 6b. An advisor learns from a journal editor that her current student submitted a manuscript for publication, but without her approval or knowledge. What should she do?
- 6c. A student is unhappy that her advisor wants to delay publication and wants to submit a manuscript without her advisor knowing about it or even being listed as an author, because the journal editor might then question the submission by her and not her advisor. What should she do?
7. As new student finds an error in the recently published work by others in her group, but is told that she should not be an author in the erratum they plan to publish, and she thinks that this is wrong because she found the error. What should she do?
8. The senior author has learned that not all of the authors of a submitted manuscript have responded to the request of the journal to confirm their authorship (of the manuscript as submitted), and is concerned about delaying the review process. What should she do?

9. An author disagrees with the very limited role attributed to her in the description of who did what in a manuscript about to be submitted. What should she do? (More journals are asking authors to list how each author has contributed to the manuscript, not only for giving proper credit, but to shield authors from fraud they did not participate in.)

Papers and Theses

The content itself in preparing papers

1. A graduate student is upset because he is arguing with his advisor over which micrograph they should include in the paper they are writing: one showing a perfect sample, which was obtained only sometimes and whose inclusion would give the article much more prestige, or one showing a more typical sample that contained defects and whose inclusion would make the paper more ordinary. What should he do?

2. An undergraduate sees a certain feature in a signal only sometimes and wants the line in the paper describing this work to read “The signals sometimes have this feature.” while the professor says it should read “The signals always have this feature.” because whenever he is in the lab he sees it. What should he do?

3a. A researcher measures a (very good) conversion efficiency of 20% for a process sometimes, but usually measures 2%, and wants to publish a paper giving the 20% value. What should he do?

3b. A researcher measures a (very good) conversion efficiency of 20% for a process sometimes, but usually measures 2%, and wants to submit a proposal for more funding on this work and wants to use the 20% value to promote the work. What should he do?

3c. A researcher measures a (very good) conversion efficiency of 20% for a process sometimes, but usually measures 2%, and wants to use the 20% value in a progress report to the agency that is funding the work. What should he do?

4a. A scientist has data that are central to the paper but that do not look very convincing, so he wonders if it would be okay to summarize them in the main text and show the data only in the supplemental information, because the supplemental information is officially considered part of the paper. What should he do?

4b. A scientist has micrographs of samples that are central to the analysis in the paper but that do not look very convincing, so he wonders if it would be okay to present idealized diagrams of them in the main text and show the real micrographs only in the supplemental information, which is officially considered part of the paper. What should he do?

5. A scientist wants to make a more convincing case about the novelty of his work, and wonders if it would be okay to discuss the related prior work mostly or only in the supplemental information, which is officially considered part of the paper, so it may be overlooked by the reviewers. What should he do?

6a. A scientist wonders if it is okay to include in a publication or presentation a highly idealized diagram of structures on the surface of a material, when the actual structure, as determined by microscopy, is much less regular and much more uncertain than the diagram would depict. What should he do?

6b. A scientist wonders if it is okay to include in the main part of a publication a highly idealized diagram of structures on the surface of a material, and present the actual structure, as determined by microscopy, which is much less regular and much more uncertain than the diagram would depict, in the supplemental information. What should he do?

7a. A researcher notices that adding a trace amount of an element to a material (or process) makes it fantastically better and a potential financial bonanza, and wants to publish the results but is afraid that others will be able to reap benefits from this finding better and faster than she can if all is disclosed. What should she do?

7b. A researcher notices that adding a trace amount of an element to a material (or process) makes it fantastically better and a potential financial bonanza, and wants to file a patent on it, but is afraid that others may still effectively “steal” the results. What should she do?

7c. A researcher notices that adding a trace amount of an element to a material (or process) makes it fantastically better and a potential financial bonanza, and wants to hide the results from all and go into business by herself, but wonders if this is right. What should she do?

7d. A researcher notices that adding a trace amount of an element to a material (or process) makes it fantastically better and a potential financial bonanza, and wants to hide the results from her advisor and other collaborators. What should she do?

8a. A scientist wonders if he can use a figure from one of his papers in another paper, properly referencing it, without it violating copyright laws and without it being considered self-plagiarism. What should he do?

8b. A scientist wonders if he can use text from one of his papers, properly referencing it, in a “perspectives” commentary/review article, without it being considered self-plagiarism. What should he do? [Self-Plagiarism]

9. A professor learns that the paper he, his recently graduated student, and others co-authored is being rejected by the journal (either during initial review or after acceptance and during the proofing stage) because it is very similar to one of the chapters in the student’s thesis, and because the journal considered these results to already be published when their university posted the thesis on the web. What should he do?

10. A professor perusing the lab book of a student who recently left his group and the university notices some great results that deserve publication, but he is not able to contact this former student after an exhaustive effort to verify the contents of the lab book and to agree on a publication strategy. What should he do? [Stanton's Statistics in Gunsalus]

11. A journal editor learns that an image in a submitted article may be faked. What should he do? [Faked-Images]

How to prepare content

1. A professor learns that a student writing a draft of a manuscript cites papers that he never read, but only saw referenced in different papers, such as review articles. What should he do?

2. A professor wonders if it would be wrong to hire a company to write his research papers, because it would be essentially the same as when graduate students or postdoctoral scientists write them. What should he do?

3. A professor wants to use a figure in a book that he is writing, and wants to cite it properly but cannot afford to pay a permission fee if, in fact, there happens to be a fee for using it. What should he do?

4. A scientist wants to use notes from someone else in his paper and wonders if this is justified because there is no copyright symbol on the notes. What should he do?

5a. A person wonders if it is okay to publish a paper in which some of the crucial details are misstated so others would not be able to reproduce the work quickly and compete with him. What should he do? [High Tc]

5b. Someone learns that a certain group has published a paper in which some of the crucial details have been misstated so others would not be able to reproduce the work quickly and compete with them. What should he do?

6. A student is writing a paper describing the use of a laser to make a measurement, and wonders whether adding a reference to demonstration of the first laser or of the first laser of this type is needed. What should he do?

7. A scientist wonders whether it would be proper to add relevant references to work done by several researchers, who would be likely reviewers, along with those to the dominant papers in the field, and wonders whether this is proper. What should he do?

When to submit

1a. A graduate student hands a draft of a paper to his advisor and they both agree that it will take several months to finalize the data analysis, and learns several months later that the advisor had submitted the paper and it was accepted. What should he do? [Sherry's Secret in Case]

1b. A graduate student hands a draft of a paper to his advisor and they both agree that it will take several months to finalize the data analysis, learns several months later that the advisor had submitted the paper and it was accepted, and when confronting the advisor about this hears that the data were good enough to publish and he needed to have this as a publication for a proposal renewal. What should he do? [Sherry's Secret in Case]

2. A graduate student is being pushed by his professor to start writing a paper describing their results in a hurry, because the professor says the work is ready for publication (and the student suspects, because the professor also needs the publication to get funding), but he does not think they are ready even to think about starting the writing process. What should he do?

3. A scientist and his colleague see an interesting result that occurs sometimes, but frequently enough to suggest it may be real and, before they write up a manuscript on it, subsequent work in their group cannot reproduce these exact results in many attempts, and the colleague insists on publishing their early work anyway—and to ignore the later work because it could be described in a subsequent publication. What should he do?

4. One scientist tells another that the latter's conclusions cannot be supported by the data because the measurement error is too large and accuracy is too low, and is told by the latter that he is going to publish the results anyway, saying that the conclusions are rock solid, and moreover he wants to be cited as the first person to publish this result—and others repeating the measurement will be able to correct any errors he made anyway. What should he do?

5. A scientist has a great result that he wants to publish rapidly, but wants to stay ahead of the competition, and wonders whether it would be wrong to leave out a few key experimental details, introduce some typos, or give atomic or molecular symbols that are just a little bit wrong. What should he do?

6a. A graduate student has an advisor who is very busy and who needs to spend much time off campus, so he wants to write a paper all by himself so as not to bother and inconvenience his author, but wonders whether this is right. What should he do?

6b. A graduate student has an advisor who is very busy and who needs to spend much time off campus, so he wants to write and then submit a paper all by himself so as not to bother and inconvenience his author, but wonders whether this is right. What should he do?

7. A professor learns that a graduate student has sent out the manuscript that they were working on to someone (who was not an author) for comments, without his knowledge or consent. What should he do?

8. A scientist claims credit for discovering an effect because his paper announcing it was published first, but someone else with a very similar paper also claims credit because he submitted his own paper first. What should he do?

9. A doctoral student learns just before he submits his dissertation that someone else has published the same work and wonders whether his thesis will still be accepted. What should he/ do?

How to submit

1a. A professor wants to write one long, comprehensive paper about studies done by his group that consists of several graduate students, but the graduate students instead want the work to be published as a series of short papers so each could be first author on one of them. What should he do? [Being-A-Scientist]

1b. The graduate students in a group want their work to be published as a series of short papers so each could be first author on one of them, but their professor wants to write one long, comprehensive paper about these studies. What should they do? [Being-A-Scientist]

2a. A scientist wants to increase the impact of his work so he submits essentially the same manuscript with slightly different titles and abstracts to ten different journals, but is challenged in doing this by a co-author? What should he do?

2b. A scientist wants to get his work published in the best journal possible so he submits essentially the same manuscript with slightly different titles and abstracts to ten different journals, thinking he will retract the papers accepted to all but the most prestigious journal that accepted the paper, but is challenged in doing this by a co-author? What should he do?

3a. A new staff scientist is told by his advisor to submit their joint paper to two journals at the same time, one a high-impact journal with low acceptance rate and fast turn-around and the other a good journal with higher acceptance rate and slow turn-around, and then if accepted by the former they could withdraw their paper from the latter. What should he do? [APS]

3b. A new staff scientist, still during her probationary period, is told by his advisor to submit their joint paper to two journals at the same time, one a high-impact journal with low acceptance rate and fast turn-around and the other a good journal with higher acceptance rate and slow turn-around, and then if accepted by the former they could withdraw their paper from the latter. What should he do? [APS]

4. A professor and his (professor) colleague have agreed to submit a manuscript for publication, but he learns that his colleague has made significant changes to the manuscript before submission—including to the author list and order, and to the equations and conclusions—without his approval or even knowledge. What should he do?

5. A graduate student and three others are working a project, that closely relates to potentially exciting intellectual property/patent that two of these others justly own, and wonders how to deal with those two because they are pushing for rapid publication of results that he thinks are far too preliminary. What should he do?

6. After his manuscript was rejected by one journal, a scientist wants to submit it to a second journal, which is published by the same professional society, but learns that he is supposed to disclose to the second journal the rejection by the first one, even though the editorial boards of the two journals are supposed to be totally separate, and he wonders whether requiring such a disclosure is proper. What should he do?

Whom to cite

1a. A professor wonders whether he should contact a set of his professional friends and enter into an agreement to cite each other's work very heavily, so all of their h-indices will soar. What should he do?

1b. A professor is contacted by a colleague who invites him to join a set of professional friends in citing each other's work very heavily, so all of their h-indices will soar. What should he do?

2. A graduate student from a big group realizes that success in his career may be determined by how many times his papers are cited and wonders whether it would be proper for all his group colleagues to agree to always cite much of each others' work in all of their publications during their careers to boost their citations. What should he do?

3. A professor wonders whether he should submit a manuscript for publication because it is so great that it will close a field for forever and therefore it will never be cited, and so it will not increase his h-index but will decrease the number of times he is cited per published paper. What should he do?

Retractions [Retraction-Watch][Paper-Retractio

1. A graduate student is angry because he has been told by his advisor that the analysis in the paper they just published is flawed and no longer supports the main claims of the paper, and he wants to officially retract it. What should he do?

Plagiarism [Plagiarism]

1a. A professor on a thesis defense committee notices that a large part of the introduction to a thesis is very similar to or identical to sections he has read in papers. What should he do? [Plagiarism]

- 1b. A professor on a thesis defense committee notices that several chapters appear to be very similar or identical to papers written by the student. What should he/she do?
- 1c. A professor reading student term paper in a course learns that an on-line search shows that “much” of it is the same as material available on-line. What should he do?
2. A journal editor notices that large chunks of introductory and background material in a submitted manuscript seems to have been lifted from an article published by somebody else. What should he do?
3. A journal editor notices that a submitted manuscript seems to have the same format and structure as one from an article published by somebody else, but with words changed to reflect the topic of this article. What should he do?
4. A student notices that a manuscript being prepared by his group is very similar to one the group has just submitted (or published)? What should he do?
- 5a. A graduate student nearing the end of his thesis work, notices that a paper has just been published by others that covers pretty much the same work as his own work, and that is unlikely that his professor has noticed this published work. What should he do?
- 5b. A professor, who has a graduate student nearing the end of his thesis work, notices that a paper has just been published by others that covers pretty much the same work as his own student’s work. What should he do?
- 6a. A student believes that her professor has used his (the student’s) published work to write an independent paper. What should he do? [Plagiarism-Columbia]
- 6b. A faculty member believes that a colleague has used his published work to write an independent paper. What should he do?
7. An advisor notices that a paper has been published by another group that appears to essentially copy material from the doctoral thesis his recently-graduated student had posted on the web, and which they had not yet published. What should he do?
8. Someone sees a published set of data testing the effectiveness of new drug that shows the drug may provide some benefit, but that more testing is needed, and later see seemingly the same data published, and presumably plagiarized, by nine other groups, and worries that because the data set is now ten times larger, there is now greater confidence in the effectiveness drug and it may now be prescribed to the public. What should he do? [inspired by Gellman-Basboll]

Potential theft of content (overlapping some with plagiarism)

1a. A student allows another student to see her manuscript and before submitting it for publication learns that this other student used some illustrative (though not results-related) figures from her manuscript without permission. What should he do?

1b. A student allows another student to see her manuscript and before submitting it for publication learns that this other student used some illustrative (though not results-related) figures from her manuscript without permission, and moreover, this other student now demands that her own paper should be cited as the original source of the figures in this manuscript she is about to submit. What should he do?

2. A professor learns that another group has hacked into the computers in his group, presumably to steal data or to confirm if they got the same results. What should he do?

3. A professor learns that the research viewgraphs he gave to her project monitor from a funding agency for a review were subsequently published by that monitor as his own work (with the monitor's colleague listed as a co-author). What should he do?

4. A student does some research at one university and after graduation continues this work at another institution and wants to publish it without acknowledging his first place of work or the collaborators there, and wonders if this is right? What should he do?

5. A junior student learns that a senior student in the same group has just made a presentation at a conference presenting work that was solely that of the junior student, and he is now very angry. What should he do? [HMS]

Questions about published papers (aside from plagiarism)

1. A professor reads several papers describing different experiments from a rising star at an elite industrial lab and notices the experimental data traces are identical in each paper, and even the noise is the same. What should he do? [Schön]

2. A researcher perusing a published paper thinks that the author should have cited his work and did not. What should he do?

3a. A student notices that several equations in a published paper related to his research are wrong. What should he do?

3b. A professor hears from a student that several equations in a published paper related to their research are wrong. What should he do?

3c. A professor and his student point out to an author, in a casual conversation at a professional meeting, that several equations in his published paper are wrong, are told by the author that they are mistaken about this, and soon thereafter they learn that after this

conversation the author submitted a new paper for publication with the corrected equations—without notifying them and without including them as authors. What should they do?

3d. A professor and his student point out to an author, in a casual conversation at a professional meeting, that several equations in his published paper are wrong, are told by the author that they are mistaken about this, and soon thereafter they learn that after this conversation the author submitted a new paper for publication with the corrected equations—without notifying them and without including them as authors—and the professor and student then notice that these “corrected equations” are still wrong. What should they do?

4. A student learns that several concepts in a published paper by his professor and a previous student are wrong. What should he do?

5. A young scientist learns that several concepts in a published paper are wrong and presents this, and is met with accusations of research misconduct and is then concerned about his career. What should he do?

Preparing Proposals and Seeking Funding

1. A graduate student is asked by her professor to help prepare a research proposal and thinks this is wrong. What should she do?

2. A graduate student is shown by her professor a research proposal that she submitted, and notices that it denotes figures that were already published as being unpublished and cites experiments that were never done as being performed. What should she do? [Truth]

3. After a professor is asked by her department chair to write a joint proposal, she writes it and the chair says it is not very good, and this professor later learns the chair has submitted it with herself as the only PI and it gets funded. What should she do?

4. A professor writing a research proposal with a fellow professor learns that the latter is also involved in writing another proposal that is competitive with their own proposal, but has not told her about this. What should she do?

5. A scientist is writing a research proposal and thinks it okay to use material from a proposal she has reviewed. What should she do? [Kowalski and Paquette in ORI] [Karnik in ORI]

6a. A professor writing a proposal with a colleague that is due soon is getting little input and help from the colleague, and suspects that the colleague is also involved on a competing proposal effort. What should she do?

6b. A professor writing a proposal with a colleague that is due soon is getting little input and help from the colleague, and suspects that the colleague is also involved on a competing proposal effort and will leave her own effort soon and so late that she would not be able to find another collaborator in time. What should she do?

7a. A professor writing a proposal with a colleague later learns that she submitted the proposal they jointly wrote by herself without including her. What should she do?

7b. A professor writing a proposal with a colleague later learns that she submitted the proposal they jointly wrote by herself without including her, and later is told by the colleague that her exclusion did not matter anyway because the proposal was not funded. What should she do?

7c. A professor writing a proposal with a colleague later learns that she submitted the proposal they jointly wrote by herself without including her, and later learns the proposal was funded. What should she do?

8a. A professor is invited to serve on two competing proposal efforts and wants to join both and wonders if this is proper. What should she do?

8b. A professor is invited to serve on two competing proposal efforts, joins both, and wonders if it would be proper to leave one just before submission knowing it would help the one she will remain on and hurt the other effort. What should she do?

9. A professor is about to submit a proposal in response to a request for proposals, which requires submission to a government funding agency officer who is known to have requested kickbacks. What should she do? [Fraud-At-NSF]

10. The only way a scientist can continue her dream research is to accept funding from a government agency (or company) whose mission and activities she does not like. What should she do? [APS]

Reviewing Papers and Proposals

Papers

1. A scientist is asked to review a manuscript submitted for publication that is very similar to one he has just submitted (but clearly involves independent work). What should he do?

2a. A scientist is asked to review a manuscript submitted for publication that is very similar to one he is just about to submit (but clearly involves independent work). What should he do?

2b. A scientist is asked to review a manuscript submitted for publication that is very similar to one he is just about to submit (but clearly involves independent work), and wonders if it would be right to hold off reviewing it because he normally has to wait many months before receiving the reviews of his own papers. What should he do?

3. A scientist is asked to review a manuscript submitted for publication that is very similar to one he is about to write. What should he do?

4. A scientist is asked to review a manuscript submitted for publication that would be very similar to one he would write after doing the project he is just beginning. What should he do?

5a. A person wonders if it is okay to hold up the review of a manuscript because he wants to reproduce the reported results and publish the work first. What should he do?

5b. A person wonders if it is okay to hold up the review of a manuscript because he wants to reproduce the reported results and publish the work, because the other manuscript would not be delayed too long. What should he do?

5c. A person wonders if it is okay to hold up the review of a manuscript because he wants to reproduce the reported results and publish the work, because he could get an even better result, which would benefit the world of science even more. What should he do?

5d. Someone learns that a certain group is holding up the review of his manuscript because they want to reproduce the reported results and publish the work first. What should he do?

6a. A young professor writes a very positive review for a manuscript concerning the very same subject he was working himself, and wonders whether it would be right for him to continue to work on this subject and publish his own paper if his results were the same in this previous publication. What should he do? [APS]

6b. A young professor writes a very positive review for a manuscript concerning the very same subject he was working herself, submits his own paper a short time later (describing the same results as in the other paper), and is worried because the first author has complained to the journal and the journal editor might contact his department chair. What should he do? [APS]

7a. A scientist is asked to review two manuscripts submitted for publication to two different journals, at approximately the same time, that are roughly the same and from the same sets of authors. What should he do?

7b. A scientist is asked to review two manuscripts submitted for publication to two different journals, at approximately the same time, that are roughly the same and from two different sets of authors at the same institution. What should he do?

7c. A scientist is asked to review two manuscripts submitted for publication to two different journals, at approximately the same time, that are roughly the same and from two different sets of authors at different institutions. What should he do?

8. A scientist is asked to review two manuscripts submitted for publication to two different journals at approximately the same time from two different groups at the same institution, that present exactly the same raw data and similar, but not identical analysis. What should he do?

9a. A scientist is asked to review a manuscript in which his work should have been cited, but is not. What should he do?

9b. A scientist is asked to review a manuscript in which his work could legitimately be cited, but is not, and thinks it would be fine to request his citation be added as part of the review—because it would not hurt the paper and would increase the number of times his paper will be cited (and number of citations is used by some as a measure of impact and success). What should he do?

10. A scientist is asked to review a manuscript that cites his work, and is inclined to recommend publication even though it is a borderline publication because his work would be cited (and this would not be wrong because it is borderline). What should he do?

11a. A scientist wonders if it would be better to agree to all the changes recommended by the manuscript's reviewer so the so-revised paper can be accepted for publication and accepted quickly, even though he thinks some of them are wrong, rather than to fight them. What should he do?

11b. A scientist wonders if it just be easier to agree to all the changes recommended by the manuscript's reviewer so the so-revised paper can be accepted for publication and accepted quickly, even though he thinks some of them are wrong, rather than to fight them—because he can always remove these changes in the proofs. What should he do?

11c. A scientist wonders if it just be easier to agree to all the changes recommended by the manuscript's reviewer so the so-revised paper can be accepted for publication and accepted quickly, even though he thinks some of them are wrong, rather than to fight them—because his paper can start accumulating citations quickly and this would help increase his h-index. What should he do?

12. A postdoctoral scientist learns from his current advisor that he (favorably) reviewed his single-author publication that he wrote while under his advisor's mentorship. What should he do? [Bones]

13. A graduate student is asked by his professor to help review a manuscript he has been asked to review, and wonders whether this is proper. What should he do?

14. A graduate student helping his professor review a manuscript and wonders whether it is okay to discuss the contents of the paper with a fellow graduate student. What should he do?

15. A student is told by his advisor that he is reviewing a paper that is in competition with the one he just submitted, and though it is a fine paper he plans to give it a bad review to avoid competition. What should he do? [APS]

16a. A reviewer notes that the author did include an important paper that he, the reviewer, had authored and wants to note this in the anonymous review but wonders whether this is proper. What should he do?

16b. A reviewer notes that the author did include an important paper that he, the reviewer, had authored and wants to note this in the anonymous review but wonders if this would disclose his identity. What should he do?

16c. A reviewer wants to mask his identity by suggesting that the author include a reference that he, the reviewer, did not author, but wonders whether this is right. What should he do?

17. As part of the review of his paper, an author receives a comment from the editor that more papers from the society publishing the journal should be included. What should he do?

18. A funding agency officer wonders whether it would be proper to choose reviewers who are known to grade proposals more generously to examine the proposals he likes and reviewers who are known to grade proposals more harshly to examine the proposals he does not like. What should he do?

19. A funding agency is conducting a series of parallel review panels to evaluate submitted proposals (in which only a very small fraction of proposals reviewed in each will be funded) and wonders whether it would be correct to include all of a given university's proposals in one panel, to help prevent that university from hogging all of the funding. What should he do?

Proposals

1. A scientist is asked to review a proposal that is very similar to one he has just submitted. What should he do?

2. A scientist is asked to review a proposal that is very similar to one he is just about to submit. What should he do?

3. A scientist is asked to review a proposal that is very similar to one he has just begun to write. What should he do?

4. A scientist is asked to review a proposal and gets some research ideas from it, and wonders if it would be fine to follow up on these ideas, since they are not exactly the same as those given in the proposal. What should he do?

5. A funding officer at a government agency notices that a recently submitted proposal has a paragraph from a declined proposal that had submitted by someone else and reviewed by this more recent proposal submitter. What should he do?

6. A graduate student is asked by his professor to help review a proposal he has been asked to review, and wonders whether this is proper. What should he do?

7. A graduate student helping his professor review a proposal and wonders whether it is okay to discuss the contents of the paper with a fellow graduate student. What should he do?

8. A student is told by his advisor that he is reviewing a proposal that is in competition with the one he just submitted, and though it is a fine proposal plans to give it a bad review to avoid competition. What should he do? [APS]

9. At a brainstorming session, a postdoctoral scientist comes up with a good idea, but learns later that his advisor chose another postdoc as a co-PI on a proposal to pursue this idea, and he feels that he should have been chosen since it was his idea and would have helped launch his career. What should he do? [APS]

10. A student is told by his advisor that he is reviewing a proposal that is in competition with the one she just submitted, and though it is a fine proposal plans to give it a bad review to avoid competition. What should he do? [APS]

Grants and Money (also see other sections)

Grants

1. A professor is supporting a graduate student using a grant that is almost out of funds, and wonders whether she should fund the student from another grant which is earmarked for a research direction not currently in-line with the student's project. What should she do?

2. A graduate student, told by her professor that she needs to modify the direction of her thesis research some because her research assistantship is now being supported by a new second grant, is upset that her research plans are being altered because of money considerations and not by where the results take her. What should she do?

3. A graduate student feels her thesis work is driven by the grants she is paid by and is unhappy because she cannot pursue her research in the direction driven by her results. What should she do?

4. A student is told to investigate how chemical A hurts an environmental situation, find that a different, and hitherto ignored chemical B is really to blame, and is admonished by her advisor because they have industrial funding only to examine chemical A and because announcing to the world that there is another chemical with a negative impact on the environment would hurt the chemical industry. What should she do? [Barking Up the Wrong Tree? in Case]

5a. A postdoctoral scientist needs to revise a manuscript she initially submitted as a graduate student, but has been told by her current professor that the government funding their study will not allow any time to be spent on this because of effort reporting rules. What should she do?

5b. A postdoctoral scientist needs to revise a manuscript she initially submitted as a graduate student at a different university, but has been told by her professor that effort reporting rules of their current government funding require that she spend 100% of her professional time on the funded project and so she cannot work on such other activities. What should she do?

6a. A professor learns that her recently graduated doctoral student (now a postdoctoral scientist elsewhere), refuses to publish with her any more papers from their joint studies, and she is upset because the publishing that work is needed to continue the grant that previously supported that student. What should she do? [Macrina]

6b. A professor learns that her recently graduated doctoral student (now a postdoctoral scientist elsewhere), refuses to publish with her any more papers from their joint studies because they had a falling out, and is she upset because the publishing that work is needed to continue the grant that previously supported that student. What should she do?

6c. A professor learns that her recently graduated doctoral student (now a postdoctoral scientist elsewhere), refuses to publish with her any more papers from their joint studies because they had a falling out and claims that her thesis is copyrighted under her name (so the advisor has no rights to publish the work), and she is upset because the publishing that work is needed to continue the grant that previously supported that student. What should she do?

7. A researcher, who had pled guilty to committing academic fraud as charged by the U.S. Office of Research Integrity (ORI), finished serving her sentence of being barred from receiving federal research funds and being listed on the ORI website as an ethics offender for three years, and is now angry because her “record” was not totally expunged, as she had expected, because internet searches still show records of her violation. What should she do? [McCook]

Intellectual property

1a. A graduate student and her professor have a brainstorming sessions and came up with several good ideas for research, and the student later learns that her professor has filed for a patent for these ideas without consulting her or including her as an inventor. What should she do?

1b. A graduate student is told by her advisor to work on a project, and the student later learns that her professor has filed for a patent related to this project without consulting her or including her as an inventor. What should she do?

2. A graduate student notices some a strange unexpected deposit during an experiment and her adviser figures out what it is and that is important and worthy of a patent, and wonders whether she should expect to share in the benefits from the ensuing intellectual property. What should she do?

3. A student does some research at one university and after graduation continues this work and wants to file a patent on this work without acknowledging her first place of work or the collaborators there, and wonders if this is right? What should she do?
4. A student learns that she will be listed as a co-inventor on a patent application that will use her lab book as part of the proof of invention, and is worried because she sometimes modified pages in the lab book at later dates, which could lead to legal difficulties. What should she do?
5. A graduate student feels that her thesis work is being driven by the needs of the company started by her professor. What should she do?

Other money

- 1a. A graduate student sees an opportunity to use a shared research laboratory instrument without signing up for it and paying a user fee—which she thinks would be good for her advisor’s research budget—and wonders if this is right. What should she do?
 - 1b. A graduate student needs to use some gold wire for an experiment in a shared research laboratory facility, and sees an opportunity to use the wire stored by another research group without getting permission to do so (and without paying for it), and wonders if this is right. What should she do?
2. A professor learns that one of her graduate students applied for reimbursement for the exact same trip twice, and received funds both times. What should she do?

Employment and Conflicts of Interest

Seeking employment and admissions

1. A graduate student nearing the completion of his thesis learns of a job opening that he is very interested in, wants to tell a fellow graduate student who would also be interested about the position, but fears competition from that student and feels bad about this. What should he do?
2. A graduate student nearing the end of his thesis wants who wants to finish his degree and then leave science, sees a few ways that he could finish a little quicker by cutting corners that he would never even consider if he had wanted to remain in science. What should he do?
3. A postdoctoral scientist interviewing for a faculty position is asked whether he has a spouse or partner and whether that person has relocation issues, and wonders if such a question is proper. What should he do?
4. A postdoctoral scientist interviewing for a faculty position is asked about the salary and start-up funds of other offers he has received, and wonders if he should inflate these amounts to get an even better offer. What should he do?

6. A graduate student finishing his thesis receives employment offers from companies A and B at the same time and accepts the offer from company A, and wonders whether he needs to decline the offer from B at the same time. What should he do?

7a. A graduate student finishing his thesis applies for employment with companies A and B, receives and then accepts the offer from company A, later receives an offer from company B—which he prefers—and wonders whether it would be proper to then rescind his acceptance to company A and accept the offer from company B. What should he do?

7b. A graduate student finishing his thesis applies for employment with companies A and B, receives and then accepts the offer from company A, later receives an offer from company B—which he prefers—and wonders whether it would be proper to then rescind his acceptance to company A and accept the offer from company B, even though he knows that after he accepted company A they informed all other applicants that this position was no longer available. What should he do?

8a. A company makes an offer of employment to graduate student A finishing his thesis, but just learns that student B has applied for the same job and it prefers him and wonders whether it would be proper to rescind the offer to student A so it can make one to student B. What should it do?

8b. A company makes an offer of employment to a graduate student A finishing his thesis, but just learns that student B has applied for the same job and it prefers him and wonders whether it would be proper to try to convince student A from accepting, by purposefully and actively making the job seem to be undesirable and a bad match for him, so he would reject the offer, so it can make one to student B. What should it do?

9a. A graduate student finishing his thesis has already accepted a position, and then accepts an interview for a different position—because he may prefer this other position—and wonders whether this is proper. What should he do?

9b. A graduate student finishing his thesis has already accepted a position, and then accepts an interview for a different position—not because he prefers this other position, but because the interview itself would give he a broader range of interview experience, which may be beneficial in the future—and wonders whether this is proper. What should he do?

10. An undergraduate student applies to graduate school at universities A and B, receives and then accepts the offer from university A at the time of the universal deadline for making decisions, later receives an offer from university B—which he prefers—and wonders whether it would be proper to then rescind his acceptance to university A and accept the offer from university B. What should he do?

11. An admissions officer learns from a candidate on the waiting list that his school is the candidate's top choice, but later, after being admitted, the candidate needs more time to make a decision, and the officer is very surprised. What should he do?

12. An admissions officer learns from candidate who accepted admission that he has decided to decline it, way after new admissions could be made. What should he do?

13. A graduate student looking for a job has reason to believe that his employment possibilities for a particular job opportunity would be enhanced if he posed as a current undergraduate student and wonders if this would be right (and after all he had been an undergraduate)? What should he do?

14. At a job interview for an assistant professorship, a student (or postdoc) is asked about experimental details, but decides not to provide them because he had been told not to do so by his advisor because they had not submitted the patent and paper announcing the details and then faces continued questioning about them both during and after the seminar. What should he do?
[APS]

15. A few days after a graduate student receives an offer for a postdoctoral scientist position by e-mail from a professor, the professor tells him that the partially-official offer letter cannot be finalized because he just learned that his funding cannot be used to support a postdoctoral scientist. What should he do?

16. A college senior, who intends to delay graduate or professional school for a year, plans to apply for admission for this year and, if accepted, to request a deferment, and wonders if this is right. What should he do?

17. A college senior is accepted to a graduate program he does not want to attend, but wonders if it would be right to attend their all-expenses paid open house to all accepted students because it would give him a free trip to a city he would like to visit. What should he do?

18a. A college senior is accepted to a graduate program and is slated to work for Professor A who is not his first choice, and wonders if it is right to accept the position and then try to switch to the his first choice Professor B sometime after he arrives on campus. What should he do?

18b. A graduate student completing his thesis receives an offer for a postdoctoral scientist position from his second choice, Professor A, but not from his first choice, Professor B at the same university, and wonders if it is right to accept the position with Professor A and then try to switch to Professor B sometime after he arrives on campus. What should he do?

Resumes and job applications (and the like) [False-Credentials], [Kean-President]

1a. A scientist applying for a job in industry wants to makes sure his resume puts him in the best possible light and wonders whether it would be okay to tweak his resume by listing his undergraduate minor as being materials science and engineering—which would make the application stronger, instead of what it was officially, materials science. What should he do?
[Kean-President]

1b. A scientist filling out the on-line application for a job in industry, is faced with inputting his undergraduate minor from an drop-down list of “physics, chemistry, materials science and engineering, other, and none” and wonders whether it would be proper to click on materials science and engineering, even though his minor was officially materials science. What should he do?

2a. A professor notes that an adjunct professor states on his LinkedIn site that he earned his doctorate in the professor’s department, but he knows this is not true. What should he do?

2b. The department chair learns from a member of his department that an adjunct states on LinkedIn that he received his doctorate from their department wonders whether this may be a simple mistake because he knows that this adjunct professor had listed his doctorate as being from a non-U.S. university in his CV. What should he do?

2c. The department chair learns from a member of his department that an adjunct states on LinkedIn that he received his doctorate from their department wonders whether this may be a simple mistake because he knows that this adjunct professor had listed his doctorate as being from a non-U.S. university in his CV, and then learns that that that university does not offer doctorates. What should he do?

3. Someone suspects the university transcript for a job applicant has been altered. What should he do? [Ex-SAC-Trader]

4. The faculty at a university learn that the resume of their president lists articles as accepted for publication that the peer-reviewed journals claimed they had never seen. What should they do? [Kean-President]

Conflicts of interest and employment

1. A professor does consulting for (or has stock in) a laser company, and wonders whether he should buy for his lab a laser from that company or from a competitor, which may sell a slightly less expensive model. What should he do?

2a. At a department seminar, a graduate student whose professor consults with company A hears about work from a professor from a different group—who consults on a competing project at company B—that would be helped by his own research, and wonders if he should tell those at the seminar how his own research could help and then later tell his advisor what he did. What should he do? [Being-A-Scientist]

2b. At a department seminar, a graduate student whose professor consults with company A hears about work from a professor from a different group—who consults on a competing project at company B—and wonders whether he should later tell his adviser about the work presented at the seminar because of the competition between the two groups. What should he do? [Being-A-Scientist]

3a. After co-filing a patent application with his advisor, a student starts a job, learns that his discovery could help his new company immediately, but wonders whether it would be proper to disclose his application to his new employer because it may jeopardize the application. What should he do? [APS]

3b. After co-filing a patent application with his advisor, a student starts a job, learns that his discovery could help his new company immediately, but wonders whether he should disclose his application to his new employer because they are aggressive and may be able to steal the idea. What should he do? [APS]

4a. A theorist brought into a collaboration with an experimentalist at one institution who has a great new idea, is invited to speak at a second institution which competes with his new collaborator, and wonders whether it would be right to discuss this work and idea at this presentation? What should he do? [APS]

4b. A theorist brought into a collaboration with an experimentalist at one institution who has a great new idea, is invited to speak at a second institution which competes with his new collaborator, and thinks it would be right to discuss this work and idea at this presentation because his collaborator never explicitly said he should not disclose it? What should he do? [APS]

4c. A theorist brought into a collaboration with an experimentalist at one institution who has a great new idea, is invited to interview for a position and to speak at a second institution which competes with his new collaborator, and thinks it would be right to discuss this work and idea at this presentation because he wants to help his case for employment as much as possible. What should he do? [APS]

5a. The dean of school at a university learns that a department in the school is seriously thinking about hiring his qualified son as a junior, untenured faculty member, and wonders if the proper thing to do would be to recuse himself from all aspects of the hiring process, including the usual final decision of hiring by the dean. What should he do?

5b. The dean of school at a university learns that a department in the school is seriously thinking about hiring his qualified son as a junior, untenured faculty member, and wonders if the proper thing to do would be to recuse himself from all aspects of the hiring process, including the usual final decision of hiring by the dean, even after he gets approval from the provost, who is the dean's supervisor. What should he do?

5c. The dean of school at a university learns that a department in the school is seriously thinking about hiring his qualified son as a junior, untenured faculty member, and wonders if the proper thing to do would be to recuse himself from all aspects of the hiring process, including the usual final decision of hiring by the dean, because he does not expect to be dean for a long time, and in particular when a potential tenure review of her son could occur. What should he do?

6a. The dean of school at a university decides to hire his wife to oversee diversity efforts in the school, which would include interactions with faculty reporting to the dean, and wonders if this would be proper. What should he do?

6b. The dean of school at a university decides to hire his wife to oversee diversity efforts in the school, which would include interactions with faculty reporting to the dean, and wonders if this would be proper and whether to disclose to the faculty that she is his wife, which they may not know because they have different last names. What should he do?

7a. The head of a company decides to hire his son as a very high executive, and wonders whether this would be proper. What should he do?

7b. The head of a company decides to hire his son as a very high executive, and wonders whether this would be proper since this is a family-owned business. What should he do?

7c. The head of a company decides to hire his son as a very high executive, and wonders whether the shareholders would object. What should he do?

Other employment

1. A professor thinks he deserves a large salary raise and understands that the only way to get one is to seek more lucrative offers from other schools, and wonders whether it is proper to apply for other positions he has no interest in accepting just to help his salary negotiations at his current university. What should he do?

2a. After a professor at a state university complained publicly that the university was mishandling his government grant, the university reduced his pay and returned the grant. What should he do? [Professors'-Freedoms]

2b. After a professor at a private university complained publicly that the university was mishandling his government grant, the university reduced his pay and returned the grant. What should he do? [Professors'-Freedoms]

3a. After a tenured professor refused a student's request for a special opportunity to raise his grade, the University assigned another faculty member to work with the student. What should he do? [Court-Endorses-Tenure]

3b. After a tenured professor refused a student's request for a special opportunity to raise his grade, the University assigned another faculty member to work with the student and fired the professor after he filed internal grievances. What should he do? [Court-Endorses-Tenure]

4. A researcher doing research funded by a company learns that she is forbidden to publish results, but others funded by the same company are permitted to do so because their results are

more promising to the company (such as better results for a drug besting tested). What should she do?

5a. During a job interview a scientist is asked whether she likes working long hours, and wonders whether this question is ethical? What should she do?

5b. During a job interview a scientist is asked whether she likes working long hours, and wonders whether responding yes would be ethical even if she would not “like” doing this? What should she do?

5c. During a job interview a scientist is asked whether she likes working long hours, and wonders whether responding a willingness to do so would be ethical even if she would not “like” doing this? What should she do?

6. A person who, unknown to most, is quite ill learns that she is receiving an offer to a major job, which, if she accepts it, would require her new potential employer to devote great resources to her position (that would be useful only to her and not any other potential hires), and wonders whether her right to privacy about medical issues overrides all other potential ethical concerns that accepting this new job would entail. What should she do?

Other, including professionalism

Mentoring and collaborations

1. A student feels “under the gun” from her adviser (e.g. a paper about her work is about to be presented at the meeting and new results are needed, the adviser is pushing for a new manuscript for publication be prepared and submitted soon, the adviser has intimated that he might drop the student’s financial support if progress is not faster, the student is fast approaching the length time that a student can remain in the program, and so on). What should she do?

2a. A graduate student is asked by her professor to help build her house. What should she do?

2b. A graduate student is occasionally asked by her professor to run minor personal errands for her. What should she do?

3. A graduate student notices something interesting in her experiment, discusses it with her adviser, publishes a paper on it jointly with her adviser, and then only her adviser wins a Nobel Prize for this work. What should she do? [Jocelyn Bell in Being-A-Scientist]

4a. A professor, who rarely sees one of her doctoral students in the lab or office and who wonders if she is working at all or working only during off-hours and without the benefit of the interaction of group members, asks the student to work “normal business hours” and then the student takes offense and says that she can do her work well without acceding to the mentor’s request. What should she do? [Macrina]

4b. A doctoral student confronted by her professor who wants her to work “normal business hours” to interact better with her and the group, is convinced that she knows better how to be effective in research. What should she do?

4c. A doctoral student confronted by her professor who wants her to work “normal business hours” to interact better with her and the group, is insulted by the suggestion and its implications. What should she do?

5a. To greatly improve results, a professor wants to change the type of material her student is working on, but since this new material is more toxic than the former one she wonders whether she should consider implementing the suggested additional safety protocols for this new material. What should she do? [APS]

5b. To greatly improve results, a professor wants to change the type of material her student is working on, but since this new material is more toxic than the former one she wonders whether she needs to consider the suggested, but very, very expensive, additional safety protocols for this new material. What should, she do? [APS]

5c. To greatly improve results, a student is told by her professor to change the type of material she working on, but she suspects that the new material is more toxic than the former and wonders whether she should raise this issue with her advisor (and, if so, how). What should, she do? [APS]

6a. A postdoctoral scientist thinks that she needs additional expertise to conduct an experimental (or to do analysis), and wants to seek this help from (and enter into an extensive collaboration) with another professor, but is afraid of discussing this with her own professor because it might make her professor think she, the postdoc, is incompetent. What should she do? [Zwolenik]

6b. A postdoctoral scientist thinks that she needs additional expertise to conduct an experimental (or to do analysis), and wants to seek this help from (and enter into an extensive collaboration) with another professor, but is afraid of discussing this with her own professor because it might make her professor think she, the professor, is incompetent. What should she do? [Zwolenik]

6c. A professor learns that her postdoctoral scientist has entered an extensive collaboration with another professor (who may or may not be a competitor), but has never even brought up with her such a collaboration as even a possibility. What should she do? [[Zwolenik]

6d. A professor is unhappy because she has been spending so much time discussing methods and analysis with a postdoctoral scientist from another group that her own work is suffering and also suspects that the postdoctoral scientist’s advisor doesn’t even know of this interaction. What should she do? [Zwolenik]

7. A graduate student is told by her professor that she should collaborate in one area related to her research with a certain research group, but she thinks a different group could collaborate even better in this area. What should she do?

8a. A professor is angry because her dean is telling the faculty to encourage their doctoral students to pursue careers in academia, and particularly in top-ranked universities, so it will reflect well on their university. What should she do?

8b. A professor is angry because her dean is telling the faculty to encourage their doctoral students to pursue careers in academia, and particularly in top-ranked universities, so it will reflect well on their university, and learns that her success at doing this is essential for promotions and pay raises. What should she do?

Making decisions without the authority to do so

1a. A graduate student in a group is confident that she needs more lab and desk space to complete her studies. A graduating student has just vacated lab and desk space in the same group, and she thinks she should take them over because she needs them to complete her thesis. What should she do?

1b. A professor is recruiting a new student to her group and learns that the lab and desk space she was going to use for this person, which had been vacated by a previous student, has been occupied by another student (in addition to the student's earlier lab and desk space) without her permission. What should she do?

2a. A graduate student is told by a student in another group that she would like to borrow a piece of equipment and install it in her own lab. What should she do?

2b. A graduate student, told by a student in another group that she would like to borrow a piece of equipment and install it in her own lab, wonders if this is okay because it is not being used in her own group. What should she do?

3a. A student is asked by another student to loan her her ID card so she can enter a shared research laboratory facility, for which she had never received authorization. What should she do?

3b. A student learns that her own ID card was borrowed by another student so that she could enter a shared research laboratory facility, for which she had never received authorization. What should she do?

4a. A student using a shared research laboratory facility needs a box of lab gloves for her lab and wonders if it would be proper to take a box from this shared lab. What should she do?

4b. A student using a shared research laboratory facility needs a box of lab gloves (and other supplies) for her lab and wonders if it would be proper to take a box from this shared lab, especially since her group uses and pays for using the equipment there anyway, this lab has

so many gloves and other supplies, and nobody would ever notice the loss of supplies. What should she do?

5a. A student breaks a piece of equipment in a shared research laboratory facility and wonders whether it would be okay not to report it immediately. What should she do?

5b. A student breaks a piece of equipment in a shared research laboratory facility and wonders whether it would be okay not to report it immediately because there was no witness to the breakage and there is no evidence that she was the one who broke it. What should she do?

5c. A student breaks a piece of equipment in a shared research laboratory facility and wonders whether it would be okay not to report it immediately because she does not want to be blamed for the breakage and her advisor would be upset about this breakage. What should she do?

5d. A student spills acid in a shared research laboratory facility, and since there is no evidence that she was the one who did it and since no one got hurt, wonders whether she should report this spill. What should she do?

6. A graduate student supported as a full-time research assistant by a professor wants to earn extra money by taking a part-time job and is not sure her advisor would approve, and wonders if it would be okay to do so with consultation since the advisor would never know. What should she do?

7. A graduate student supported as a full-time research assistant by a professor wants to take university courses unrelated to her research and is not sure her advisor would approve, and wonders if it would be okay to do so without consultation since the advisor would never know. What should she do?

8. A student, with access to a machine shop with a couch, wonders why everyone is making such a big deal out of her letting a drunk friend sleep off stupor on the couch in the early hours of the morning. What should she do?

9. A person, planning to take a standardized (entrance or certification) exam, can get access to questions from exams of previous years, and wonders whether she should use them for preparation even though this is expressly forbidden by the testing agency. What should she do?
[Certification-Exam-Cheating]

Teaching related

1. A graduate teaching assistant allows a student to hand in her homework set late—and even after a solution set has been distributed—and then notices that the homework this student handed in was clearly copied from the solution set. What should she do?

2a. A professor notices that the course text she uses that is also printed for overseas sale is much cheaper than the one available for domestic sale, and would like to tell her students about it so they could save money. What should she do?

2b. A professor notices that the course text she uses that is also printed for overseas sale is much cheaper than the one available for domestic sale, and would like to tell her students about it so they could save money but thinks the author and publisher would then lose money. What should she do?

2c. A professor notices that the course text she uses that is also printed for overseas sale is much cheaper than the one available for domestic sale, and would like to tell her students about it so they could save money, but importing that book is not legal. What should she do?

2d. A scientist notices that the pharmaceutical she developed is much more expensive domestically than it is for overseas sale. What should she do?

Confidentiality and writing reference letters

1a. While conducting a faculty search, a faculty member sees a confidential recommendation letter for an applicant who is a former student that is uncomplimentary, and thinks it would not be divulging a confidence by suggesting to that former student not to use that letter writer again, because she would not be saying explicitly that the letter was uncomplimentary. What should she do? [Cohen]

1b. While conducting a faculty search, a faculty member sees a confidential recommendation letter for an applicant who is a former student that is uncomplimentary, and thinks it would not be divulging a confidence by suggesting to that former student not to use that letter writer again, because she would not be saying explicitly that the letter was uncomplimentary and, anyway, that letter writer has a reputation for being churlish. What should she do?

1c. After a scientist writes a confidential recommendation letter for a faculty search candidate, that candidate contacts the scientist and is angry because she somehow learned that the scientist wrote a uncomplimentary letter for her faculty application. What should she do?

1d. A postdoctoral scientist is told by her former mentor, who has seen a confidential recommendation letter written on her behalf, not to request a letter from that person again. What should she do?

1e. A postdoctoral scientist is told by her former mentor, who has seen a confidential recommendation letter written on her behalf, not to request a letter from that person again, and that postdoctoral scientist wants to let that letter writer know that she knows about the letter and is angry. What should she do?

2a. After sending the provost an evaluation of a colleague she requested, a tenured professor learns that the provost sent some of the comments to that colleague—attributing them to her. What should she do? [Cohen]

2b. After sending the provost an evaluation of a colleague she requested, a tenured professor learns that the provost sent some of the comments to that colleague—attributing them to her, and that the provost thinks this evaluation was not confidential because they were transmitted by e-mail. What should she do? [Cohen]

2c. After sending the provost an evaluation of a colleague she requested, a tenured professor learns that the provost sent some of the comments to that colleague—attributing them to her, and that the provost thinks that colleagues should know what is being said about them and by whom. What should she do? [Cohen]

3a. In writing recommendation letters for graduate school, a professor wonders if it would be right to rate students in the 10% when they are only in the top 50%, because it would help the students gain admission to better schools. What should she do?

3b. In writing recommendation letters for graduate school, a professor wonders if it would be right to rate students in the 10% when they are only in the top 50%, because it would help the student gain admission to better schools, and this would reflect well on her department. What should she do?

3b. In writing recommendation letters for graduate school, a professor wonders if it would be right to rate students in the 10% when they are only in the top 50%, because it would help the student gain admission to better schools, and everyone exaggerates this assessment. What should she do?

4a. When a professor is asked to write a letter of recommendation for a former undergraduate, she notices that the GPA on the resume is lower than that on the transcript. What should she do?

4b. When a professor is asked to write a letter of recommendation for a current undergraduate, she notices that the GPA on the resume is lower than that on the transcript. What should she do?

4c. When a professor is asked to write a letter of recommendation for an engineering design job for a former undergraduate, he notices that the GPA on the resume is lower than that on the transcript and wonders whether the apparent lack of ethics in reporting an accurate GPA will translate into a corresponding lack of ethics in reporting accurate design criteria. What should she do?

5. When a student asks a professor for a letter of recommendation she is asked for a draft letter, and wonders whether this is proper. What should she do?

Whistleblowing [Gunsalus]

1a. A graduate student suspects a fellow student is not recording data ethically and wonders whether she should tell their advisor about this, because it would be wrong to “rat” on a fellow student. What should she do?

1b. A graduate student suspects a fellow student is always absent from the lab and wonders whether she should tell their advisor about this, because it would be wrong to “rat” on a fellow student. What should she do?

1c. A graduate student suspects a fellow student is plagiarizing in her papers and thesis, and wonders whether she should tell their advisor about this, because it would be wrong to “rat” on a fellow student. What should she do?

1d. A graduate student suspects a fellow student is breaking equipment in the lab and not reporting or fixing it, and wonders whether she should tell their advisor about this, because it would be wrong to “rat” on a fellow student. What should she do?

1e. A graduate student suspects a fellow student is conducting experiments in an unsafe manner, and wonders whether she should tell their advisor about this, because it would be wrong to “rat” on a fellow student. What should she do?

2a. A young doctoral student has reason to believe that her advisor has been manipulating data but is afraid of whistleblowing because her own career could be ruined in the process. What should she do? [APS]

2b. An advisor is accused by her young doctoral student of manipulating data. What should she do? [APS]

3a. A professor suspects a fellow professor of research misconduct. What should she do?

3b. A tenured professor suspects a fellow untenured professor of research misconduct. What should she do?

3c. An untenured professor suspects a fellow tenured professor of research misconduct. What should she do?

4. One scientist suspects another scientist of research misconduct and wonders whether she should be a whistleblower and contact the government agency funding the work of the other scientist. What should she do?

5a. One scientist suspects another scientist of research misconduct and wonders whether she should be a whistleblower and contact the government agency funding the work of the other scientist. What should she do?

5b. One scientist suspects another scientist of research misconduct and wonders whether she should be a whistleblower and contact the government agency funding the work of the other scientist, and wonders what is the threshold for calling this misconduct. What should she do?

5c. One scientist suspects another scientist of research misconduct and wonders whether she should be a whistleblower and contact the government agency funding the work of the other scientist, and wonders how certain she should be of this before she proceeds. What should she do?

5d. One scientist suspects another scientist of research misconduct and wonders whether she should be a whistleblower and contact the government agency funding the work of the other scientist, and worries about damage to herself. What should she do?

5e. One scientist suspects another scientist of research misconduct and wonders whether she should be a whistleblower and contact the government agency funding the work of the other scientist, and worries about the permanent damage it could do to the accused and those associated with the accused. What should she do? (Baltimore and group exoneration exception, after long time and great cost)

Collegiality

1. A professor learns that a fellow professor has been recruiting and is about to hire a key non-technical staff member from his own group. What should he do?

2. A professor learns that a fellow professor has been recruiting a graduate student (or postdoctoral scientist) from his own group. What should he do?

3. A professor with much research funding who needs more laboratory space wants to talk to the dean about acquiring the space of another professor whose lab borders hers, and wonders whether she should consult with this other professor before seeing the dean. What should she do?

Assorted aspects of professionalism

1. A scientist wants to submit an abstract for a contributed presentation at a conference, which describes work that she expects to have done by the time of the meeting, in addition to work already done, and wonders if this is right. What should she do?

2a. A scientist preparing a contributed presentation at a conference wonders whether she is obligated to report on her later studies that are related to but beyond the purview of the submitted abstract. What should she do?

2b. A scientist preparing a contributed presentation at a conference wonders whether she is obligated to report on her later studies that are related to but beyond the purview of the

submitted abstract, which are in conflict with the results presented in the abstract. What should she do?

3. A university is upset because another organization has published a book based on its open video courses without asking any permission. What should it do? [Yale-Open-Course]

4. A professor is concerned that accepted students from the waitlist are not counted in university statistics for admissions selectivity and yield. What should she do?

5a. A researcher finds that a new code (from a colleague or company) runs much, much slower on the current computer than advertised (for that computer). What should she do?

5b. A researcher finds that a current code runs much, much slower on the newly installed computer than advertised (for that computer). What should she do?

6. A scientist knows her published study is making her a candidate for the Nobel Prize, but she may not win it because the submission date for her published paper was a little after that of a competitor who published similar results, but knows that her manuscript had been first submitted to another journal earlier than her competitor's but had been rejected by that first journal. What should she do?

7a. A scientist has political beliefs that are deemed controversial by a fraction of her community, and is concerned that her career would be destroyed if her views became known. What should she do?

7b. A scientist has opinions on technical matters that are deemed controversial by a fraction of her community, and is concerned that her career would be destroyed if her views became known. What should she do? [APS]

7c. A scientist wonders whether she has enough technical knowledge and expertise in an area to take a public stand on the associated public technical issue, such as by signing a petition promoting one side of the issue. What should she do? [APS]

8a. A professor is asked a question by a student in her class during office hours that happens to be extremely similar to one she has prepared for an upcoming class exam. What should she do?

8b. A professor is asked a question by a student in her class during a question-and-answer session with the entire class that happens to be extremely similar to one she has prepared for an upcoming class exam. What should she do?

References

- [Alpha-Beta-Gamma] R. A. Alpher, H. Bethe, and G. Gamow, "The origin of chemical elements," *Phys. Rev.* 73, 803-804 (1948). This is the (supposedly humorous) example of the famous Alpha-Beta-Gamma publication; its history is described in the following three references (in which a scientist agreed to be added as the middle author to make the author list sound like Alpha-Beta-Gamma, at the suggestion of the true senior author and the apparent displeasure of the true junior author); S. Singh, *Big Bang: The Origin of the Universe*. New York: Harper Perennial, 2005. Excerpted [Online]. Available: <http://www.npr.org/templates/story/story.php?storyId=4505414>; S. L. Marateck, "Alpher, Bethe, Gamow," *Physics Today* 61, 11-12 (2008); J. D'Agnesse, "The last big bang man left standing," *Discover*, pp. 61–67, July 1999.
- [APS] A. M. Goldman, B. Karplus, J. P. Krisch, J. M. Thomsen, B. Utter, and S. Woodruff, Report of the APS Task Force on Ethics Education. April, 2006. [Online]. Available: http://www.aps.org/about/governance/task-force/upload/FINAL_Report_Task_Force_on_Ethics_Education.pdf
- [Beaver] Television show "Leave it to Beaver", Season 2, Episode 1, Beaver's Poem, originally aired October 2, 1958.
- [Being-A-Scientist] *On Being A Scientist: Responsible Conduct In Research*, 2nd ed. Washington. D.C.: The National Academy Press, 1995. [Online]. Available: <http://www.nap.edu/readingroom/books/obas/>; *On Being A Scientist: Responsible Conduct In Research*, 3rd ed. Washington. D.C.: The National Academy Press, 2009. [Online]. Available: http://www.nap.edu/openbook.php?record_id=12192&page=R1
- [Bias] M. Jeng, "A selected history of expectation bias in physics," *Am. J. Phys.* 74, 578-583 (2006).
- [Bones] Television show "Bones", Season 7, Episode 9, The Don't in the Do, originally aired April 16, 2012. This "Bones" episode described academic publishing in a very unrealistic manner, and was critiqued in detail in [the next listed website], including for suggesting that it was fine, and not a conflict of interest, for a supervisor to agree to review for a journal an independent manuscript submitted by her current lab assistant. Episode summary of television show "Bones", Season 7, Episode 9, [Online]. Available: <http://www.poweredbyosteons.org/2012/04/bones-season-7-episode-9-review.html>
- [Case] Online Ethics Center for Engineering, National Academy of Engineering [Online]. Available: <http://onlineethics.org/>
- [Certification-Exam-ing] S. Zamost, D. Griffin and A. Ansari, CNN, "Exclusive: Doctors cheated on exams" updated 1:20 PM EST, Friday January 13, 2012. [Online]. Available: http://www.cnn.com/2012/01/13/health/prescription-for-cheating/index.html?hpt=he_c2

- [Cheating] Cheating in classes—including lab, [Online]. Available:<http://www.oberlin.edu/colrelat/ats/story/honorCode.html>; D. J. Palazzo, Y.-J. Lee, R. Warnakulasooriya, D. E. Pritchard, “Patterns, correlates, and reduction of homework copying,” *Phys. Rev. ST Physics Ed. Research* 6, 010104 (2010); L. Sanders, “Homework makes the grade, Class performance slipped for physics students who copied,” Web edition : Friday, March 26th, 2010. [Online]. Available: http://www.sciencenews.org/view/generic/id/57656/title/Homework_makes_the_grad; T. Gabriel, “To Stop Cheats, Colleges Learn Their Trickery,” *New York Times*, July 5, 2010. [Online]. Available: <http://www.nytimes.com/2010/07/06/education/06cheat.html>
- [Cohen] R. Cohen, “The Ethicist: Hidden opinions,” the second story, *New York Times Sunday Magazine*, July 27, 2008. [Online]. Available: http://www.nytimes.com/2008/07/27/magazine/27wwln-ethicist-t.html?_r=0 (The author disagrees with the advice given in this article.)
- [Court-Endorses-Tenure] “Court Endorses Value of Tenure” [Online]. Available: <http://www.aaup.org/AAUP/newsroom/Highlights/otero.htm>
- [Credit-Antibiotic] P. Pringle, “Notebooks Shed Light on an Antibiotic’s Contested Discovery,” *New York Times*, June 11, 2012 [Online]. Available: <http://www.nytimes.com/2012/06/12/science/notebooks-shed-light-on-an-antibiotic-discovery-and-a-mentors-betrayal.html?ref=science>
- [Ex-SAC-Trader] M. Goldstein and A. Stevenson, “Ex-SAC Trader Was Expelled From Harvard Law School,” *New York Times*, January 9, 2014 [Online]. Available: http://dealbook.nytimes.com/2014/01/09/ex-sac-trader-was-expelled-from-harvard-law-school/?ref=business&_r=0
- [Faked-Images] J. R. Young, “Journals find many images in research are fake,” *Chronicle of Higher Education*, June 6, 2008. [Online]. Available: <http://chronicle.com/weekly/v54/i39/39a00102.htm>
- [False-Credentials] (also see [Ex-SAC-Trader], [Kean-President]) N. Singer, “Duke scientist suspended over Rhodes scholar claims,” *New York Times*, July 20, 2010. [Online]. Available: http://www.nytimes.com/2010/07/21/health/research/21cancer.html?_r=1&pagewanted=print
- [Fermi] Story purportedly involving Enrico Fermi’s suggestion (to be updated).
- [Feynman] R. Leighton and R. P. Feynman, *Surely You're Joking, Mr. Feynman!: Adventures of a Curious Character*. New York: W. W. Norton & Company, 1985, chapter on Cargo Cult Science, quote from pp. 341-342.
- [Fraud] (Scientific Reproducibility) (also see [Faked Images], [Fraud-At-NSF], [McCook], [Poehlman], [Polywater in Being-A-Scientist], [Sames], [Schön]) *The Scientific Community's Response to Evidence of Fraudulent Publication: The Robert Slutsky Case*,

JAMA 272, 170-173 (1994), International Congress on Biomedical Peer Review and Scientific Publication [Online]. Available: http://www.ama-assn.org/public/peer/7_13_94/pv3111x.htm; G. Weissmann, "Science fraud: From patchwork mouse to patchwork data," The FASEB Journal 20, 587-590 (2006) [Online]. Available: <http://www.fasebj.org/cgi/content/full/20/6/587>; S. E. Blau, "Panel Clears MIT Scientist of Fraud: Imanishi-Kari, Baltimore Vindicated," The Tech, Volume 116, Issue 28, Wednesday, June 26, 1996 [Online]. Available: <http://www-tech.mit.edu/V116/N28/baltimore.28n.html>; D. J. Kevles, "The Baltimore Case: A Trial of Politics, Science, and Character", W. W. Norton & Company, 1st edition (September, 1998); W. G. Schulz, "Weighing Reproducibility, Chemical and Engineering News, "Dec. 2006, Vol. 84, Number 49, pp. 75-77 [Online]. Available: <http://pubs.acs.org/isubscribe/journals/cen/84/i49/html/8449sci3.html>

[Fraud-At-NSF] J. Spencer, "Ex-NSF Engineer Admits to Fraud, Pocketing Thousands," May 31, 2012, Clarendon-Courthouse-Rosslyn, VA Patch [Online]. Available: <http://clarendon.patch.com/articles/ex-nsf-engineer-admits-to-fraud-pocketing-thousands>, also see <http://www.justice.gov/opa/pr/2012/May/12-crm-690.html>

[Gellman-Basboll] Gellman and Basboll, Am. Sci. 101, 168 (2013).

[Ghostwriting] N. Singer. "Senator Moves to Block Medical Ghostwriting," New York Times, August 18, 2009 [Online]. Available: http://www.nytimes.com/2009/08/19/health/research/19ethics.html?_r=1&ref=business

[Gunsalus] C. K. Gunsalus, The College Administrator's Survival Guide, Cambridge, MA: Harvard University Press, 2006; C. K. Gunsalus, "How to blow the whistle and still have a career afterwards," Science and Engineering Ethics 4, 51-64, 75-94 (1998).

[Herman-Seminar] I. P. Herman, Presentation on "Research and Professional Ethics For All of Us" and the listing of "Mini-case Synopses." [Online]. Available: <http://www.columbia.edu/~iph1/>

[Herman-Transactions] I. P. Herman (soon to be submitted).

[High Tc] In The Trenches of Science by James Gleick <https://www.nytimes.com/1987/08/16/magazine/in-the-trenches-of-science.html> A version of this article appears in print on August 16, 1987, on Page 6006029 of the National edition.

[HMS] The Responsible Conduct of Research, Discussion Materials, Division of Medical Sciences, Harvard Medical School, 2010-2011 (2010).

[House] Television show "House", Season 2, Episode 18, Sleeping Dogs Lie, originally aired April 18, 2006. This "House" episode dealt with improper authorship, misuse of a colleague's notes, and exceedingly poor and ludicrous senior leadership [this episode] and eventual conflict resolution among some of the concerned parties, in [the next reference]

Television show “House”, Season 2, Episode 21, Euphoria, Part 2, originally aired May 3, 2006.

[Kean-President] R. Pérez-Peña, “Split Board Backs Kean University’s Leader, Under Fire for Résumé,” *New York Times*, February 15, 2012 [Online]. Available: <http://www.nytimes.com/2012/02/16/nyregion/kean-universitys-trustees-back-its-president.html?pagewanted=all>; http://www.nytimes.com/2012/02/16/nyregion/kean-universitys-trustees-back-its-president.html?_r=1&scp=1&sq=Kean%20University&st=cse

[Kovac] J. Kovac, *The Ethical Chemist: Professional and Ethics in Science*. Upper Saddle River: Pearson Prentice Hall, 2004.

[Lehrer] Songs by Tom Lehrer, 1953. This is the clever Tom Lehrer satire “Lobachevsky” on how to plagiarize . (Advice on the need to plagiarize to become a success is supposedly given by the great mathematician Nikolai Ivanovich Lobachevsky; of note, Lehrer explained that Lobachevsky's name was used for prosodic reasons and was not intended to slur the character of the renown mathematician, see: Liner notes, *The Tom Lehrer Collection*, Shout! Factory, 2010. The decision to use the name of a real scientist of presumably high character could itself be the topic of an ethics discussion.)

[Macrina] F. L. Macrina, *Scientific Integrity: An Introductory Text With Cases*, 2nd ed. Washington D.C: ASM Press, 2000.

[McCook] A. McCook, “Life After Fraud,” *The Scientist*, July, 2009, 28-33.

[ORI] Office of Research Integrity (ORI): Newsletter. [Online]. Available: <http://ori.hhs.gov/>

[Overviews] (also see [APS], [Being-A-Scientist], [Case], [Feynman], [Kovac], [Macrina], [ORI]) J. Kovac and B. P. Coppola, “Universities as moral communities,” *Soundings: An Interdisciplinary Journal* 83, 765-777 (2000); C. Whitbeck, *Ethics in Engineering Practice and Research*, 2nd ed. Cambridge: Cambridge University Press, 2011; J. J. Zwolenik, Columbia University NSEC Session/Short Course on Responsible Conduct of Research, May 19-20, 2005; *Integrity in Scientific Research*. Institute of Medicine, National Research Council, Washington D.C.: The National Academies Press, 2002; “How to Survive Graduate School and Start Your Career in Science/Engineering: A Handbook for Graduate Research Ethics Education, Association for Practical and Professional Ethics; and *Research Ethics: Cases and Commentaries*, “Volumes 1, 2, 3, 4, 5 and 6, Brian Schrag, Editor [Online]. Available: <http://www.indiana.edu/~appe/cases.html>; K. Kirby and F. A. Houle, “Ethics and the Welfare of the Physics Profession,” *Physics Today*, p. 42, November 2004. [Online]. Available: <http://www.aip.org/pt/vol-57/iss-11/p42.html>; C. Whitbeck, “Trust and the Future of Research,” *Physics Today*, p. 49, November 2004. [Online]. Available: <http://www.aip.org/pt/vol-57/iss-11/p48.html>; From the Archives: “The Scientist's Code of Ethics: W. A. R. Leys, *Physics Today*, p. 55, November 2004. (initially: *Physics Today*, March 1952, pages 10-15)) [Online]. Available: <http://www.aip.org/pt/vol-57/iss-11/p55.shtml>; *The Responsible Researcher: Paths and Pitfalls*, Sigma Xi, The Scientific Research Society, Research Triangle Park, North Carolina, 1999; B. C. Martinson, M. S.

Anderson and R. de Vries, “Scientists behaving badly,” *Nature* 435, 73-738 (2005); M. Wadman, “One in three scientists confesses to having sinned,” *Nature* 435, 718-719 (2005); J. Giles, “Researchers break the rules in frustration at review boards,” *Nature* 438, 136-137 (2005).

[Paper-Retracted] “Paper retracted following genome data breach,” *Science* 325, 1486-1487 (2009); “A Sharp Rise in Retractions Prompts Calls for Reform,” [Online]. Available: http://www.nytimes.com/2012/04/17/science/rise-in-scientific-journal-retractions-prompts-calls-for-reform.html?_r=1&ref=science; Retraction Watch: “Tracking retractions as a window into the scientific process, A quick Physical Review Letters retraction after author realizes analysis was “performed incorrectly”” [Online]. Available: <https://retractionwatch.wordpress.com/2011/08/10/a-quick-physical-review-letters-retraction-after-author-realizes-analysis-was-performed-incorrectly/#more-3666>.

[Plagiarism] (also see [Lehrer], [Plagiarism-Columbia], [Self-Plagiarism]) R. Tomsho, “Some Foreign Engineers' Grasp Of Research Fundamentals Becomes a Concern to Peers 'Not Really Intending to Copy',” *Wall Street Journal*, August 15, 2006; J. Laster, “Malone U. President Steps Down Amid Plagiarism Accusations,” *Chronicle of Higher Education*, February 23, 2010 [Online]. Available: <http://chronicle.com/article/Malone-U-President-Steps-Down/64328/>

[Plagiarism-Columbia] M. Santora, “Columbia Professor in Noose Case is Fired on Plagiarism Charges,” *New York Times*, June 24, 2008 [Online]. Available: <http://www.nytimes.com/2008/06/24/nyregion/24columbia.html>; G. Rayman, “Columbia Fires 'Noose' Professor for Plagiarism,” *The Village Voice*, June 17, 2008 [Online]. Available: <http://www.villagevoice.com/2008-06-17/news/columbia-fires-madonna-constantine/>.

[Plutonium photo, sloppiness] Science-parts I and II
<http://www.sciencemag.org/news/2017/06/near-disaster-federal-nuclear-weapons-laboratory-takes-hidden-toll-america-s-arsenal>
https://www.washingtonpost.com/world/national-security/safety-lapses-undermine-nuclear-warhead-work-at-los-alamos/2017/06/17/87f051ee-510d-11e7-b064-828ba60fbb98_story.html?utm_term=.6162fa4d4171

[Poehlman] J. Interlandi, “An unwelcome discovery,” *New York Times Sunday Magazine*: October 22, 2006. [Online]. Available: <http://www.nytimes.com/2006/10/22/magazine/22sciencefraud.html?ei=5088&en=e03f2ce7d86fd269&ex=1319169600>

[Professors'-Freedoms] P. Schmidt, “Balance of Power: Professors' Freedoms Under Assault in the Courts,” [Online]. Available: <http://chronicle.com/weekly/v55/i25/25a00103.htm>

[Pushing for specific results] Science Needs a Solution for the Temptation of Positive Results
<https://www.nytimes.com/2017/05/29/upshot/science-needs-a-solution-for-the-temptation-of-positive->

results.html?action=click&contentCollection=upshot&module=NextInCollection®ion=Footer&pgtype=article&version=spotlight&rref=collection%2Fspotlight%2Fhealthcare-decoded

[Retraction-Watch] Retraction Watch. [Online]. Available: <https://retractionwatch.wordpress.com>

[Sames] W. G. Schulz, "Sames retracts more papers: Columbia U. professor publishes notices that former grad student's work cannot be reproduced," Chem. Eng. News, June 16, 2006; <http://pubs.acs.org/cen/news/84/i25/8425papers.html>; M. Zhong, "Former CU Ph.D student found guilty of 21 instances of misconduct," Columbia Spectator, December 2, 2010; also <http://pubs.acs.org/cen/science/89/8932sci1.html>, <http://pubs.acs.org/cen/editor/89/8932editor.html>; http://pubs.acs.org/cen/news/pdf/r_Bracher_11_107Responsive_Redacted.pdf

[Schön] E. S. Reich, *Plastic Fantastic: How the Biggest Fraud in Physics Shook the Scientific World*. New York: Palgrave Macmillan, 2009. Also see "In the matter of J Hendrik Schön" [Online]. Available: <http://physicsweb.org/articles/world/15/11/2>; "Bell Labs launches inquiry into allegations of data duplication," *Nature* 417, 367–368 (2002) [Online]. Available: <http://www.nature.com/materials/news/news/020523/journal/417367a.html>; Jan Hendrik Schön [Online]. Available: http://en.wikipedia.org/wiki/Jan_Hendrik_Sch%C3%B6n; "Investigation Finds that One Ludent Physicist Engaged in Scientific Misconduct" [Online]. Available: <http://www.aip.org/pt/vol-55/iss-11/p15.html>

[Self-Plagiarism] D. Cressey, "Eminent chemist denies self-plagiarism in 'space dinosaurs' paper," April 25, 2012. [Online]. Available: <http://blogs.nature.com/news/2012/04/eminent-chemist-denies-self-plagiarism-in-space-dinosaurs-paper.html>

[Wheeler-Kruskall] (to be updated).

[Yale-Open-Course] C. Bass, "China ♥ Yale — maybe too much?," *Yale Alumni Magazine*, June 7, 2011. [Online]. Available: <http://www.yalealumnimagazine.com/blog/?p=10384>

References

- [1] J. Kovac and B. P. Coppola, "Universities as moral communities," *Soundings: An Interdisciplinary Journal* **83**, 765-777 (2000).
- [2] Online Ethics Center for Engineering, National Academy of Engineering [Online]. Available: <http://onlineethics.org/>
- [3] A. M. Goldman, B. Karplus, J. P. Krisch, J. M. Thomsen, B. Utter, and S. Woodruff, Report of the APS Task Force on Ethics Education. April, 2006. [Online]. Available: http://www.aps.org/about/governance/task-force/upload/FINAL_Report_Task_Force_on_Ethics_Education.pdf
- [4] *On Being A Scientist: Responsible Conduct In Research*, 2nd ed. Washington. D.C.: The National Academy Press, 1995. [Online]. Available: <http://www.nap.edu/readingroom/books/obas/>
- [5] *On Being A Scientist: Responsible Conduct In Research*, 3rd ed. Washington. D.C.: The National Academy Press, 2009. [Online]. Available: http://www.nap.edu/openbook.php?record_id=12192&page=R1
- [6] C. Whitbeck, *Ethics in Engineering Practice and Research*, 2nd ed. Cambridge: Cambridge University Press, 2011.
- [7] J. Kovac, *The Ethical Chemist: Professional and Ethics in Science*. Upper Saddle River: Pearson Prentice Hall, 2004.
- [8] F. L. Macrina, *Scientific Integrity: An Introductory Text With Cases*, 2nd ed. Washington D.C: ASM Press, 2000.
- [9] J. J. Zwolenik, Columbia University NSEC Session/Short Course on Responsible Conduct of Research, May 19-20, 2005.
- [10] *Integrity in Scientific Research*. Institute of Medicine, National Research Council, Washington D.C.: The National Academies Press, 2002.
- [11] R. Leighton and R. P. Feynman, *Surely You're Joking, Mr. Feynman!: Adventures of a Curious Character*. New York: W. W. Norton & Company, 1985, chapter on Cargo Cult Science, quote from pp. 341-342.
- [12] M. Jeng, "A selected history of expectation bias in physics," *Am. J. Phys.* **74**, 578-583 (2006).
- [13] E. S. Reich, *Plastic Fantastic: How the Biggest Fraud in Physics Shook the Scientific World*. New York: Palgrave Macmillan, 2009.
- [14] Television show "House", Season 2, Episode 18, *Sleeping Dogs Lie*, originally aired April 18, 2006. This "House" episode dealt with improper authorship, misuse of a colleague's notes, and exceedingly poor and ludicrous senior leadership [this reference] and eventual conflict resolution among some of the concerned parties [the next reference].
- [15] Television show "House", Season 2, Episode 21, *Euphoria, Part 2*, originally aired May 3, 2006.
- [16] Television show "Bones", Season 7, Episode 9, *The Don't in the Do*, originally aired April 16, 2012. This "Bones" episode described academic publishing in a very unrealistic manner, and was critiqued in detail in [the next reference], including for suggesting that it was fine, and not a conflict of interest, for a supervisor to agree to review for a journal an independent manuscript submitted by her current lab assistant.

- [17] Episode summary of television show “Bones”, Season 7, Episode 9, [Online]. Available: <http://www.poweredbyosteons.org/2012/04/bones-season-7-episode-9-review.html>
- [18] Television show “Leave it to Beaver”, Season 2, Episode 1, Beaver's Poem, originally aired October 2, 1958.
- [19] R. Cohen, “The Ethicist: Hidden opinions,” the second story, New York Times Magazine, July 27, 2008. [Online]. Available: http://www.nytimes.com/2008/07/27/magazine/27wwln-ethicist-t.html?_r=0
- [20] R. A. Alpher, H. Bethe, and G. Gamow, "The origin of chemical elements," *Phys. Rev.* **73**, 803-804 (1948). This is the (supposedly humorous) example of the famous Alpha-Beta-Gamma publication; its history is described in the next three references (in which a scientist agreed to be added as the middle author to make the author list sound like Alpha-Beta-Gamma, at the suggestion of the true senior author and the apparent displeasure of the true junior author).
- [21] S. Singh, *Big Bang: The Origin of the Universe*. New York: Harper Perennial, 2005. Excerpted [Online]. Available: <http://www.npr.org/templates/story/story.php?storyId=4505414>
- [22] S. L. Marateck, “Alpher, Bethe, Gamow,” *Physics Today* **61**, 11-12 (2008).
- [23] J. D'Agnese, "The last big bang man left standing," *Discover*, pp. 61–67, July 1999.
- [24] Songs by Tom Lehrer, 1953. This is the clever Tom Lehrer satire “Lobachevsky” on how to plagiarize . (Advice on the need to plagiarize to become a success is supposedly given by the great mathematician Nikolai Ivanovich Lobachevsky; of note, Lehrer explained that Lobachevsky's name was used for prosodic reasons and was not intended to slur the character of the renown mathematician [next reference]. The decision to use the name of a real scientist of presumably high character could itself be the topic of an ethics discussion.)
- [25] Liner notes, *The Tom Lehrer Collection*, Shout! Factory, 2010.
- [26] Office of Research Integrity (ORI): Newsletter. [Online]. Available: <http://ori.hhs.gov/>
- [27] Retraction Watch. [Online]. Available: <https://retractionwatch.wordpress.com>
- [28] I. P. Herman, Presentation on “Research and Professional Ethics For All of Us” and the listing of “Mini-case Synopses.” [Online]. Available: <http://www.columbia.edu/~iph1/>
- [29] W. G. Schulz, “Sames retracts more papers: Columbia U. professor publishes notices that former grad student's work cannot be reproduced,” *Chem. Eng. News*, June 16, 2006.