



Cornell University

## Summer 2014 Undergraduate Ethics Symposium

### Symposium Schedule

<b>8:30-9:00 am</b>	<b>Registration and Bagels, Juice and Coffee/Tea</b>
<b>9:00-9:10 am</b>	<b>Welcome, <i>Colleen Kearns, Associate Director of Research, Undergraduate Biology</i></b>
<b>9:10-9:35 am</b>	<b>Overview of Research Ethics for the Undergraduate, <i>Volker Vogt, Professor of Molecular Biology and Genetics</i></b>
<b>9:45-11:00 am</b>	<b>Breakout Session-small group discussion with graduate student facilitators</b>
<b>11:00-11:15 am</b>	<b>Brief Program Break</b>
<b>11:15-11:50 am</b>	<b>Panel Discussion, Students present questions from their group to panelists</b>  <b><i>Julia Kumpf, Graduate Student, Kawate Lab, Department of Molecular Medicine, Vet School</i></b>  <b><i>Eric Richards, Professor of Molecular Biology and Genetics, Boyce Thompson Institute</i></b>  <b><i>Laurel Southard, Director of Undergraduate Research</i></b>  <b><i>Amita Verma, Director of the Cornell Office of Research Integrity and Assurance (ORIA)</i></b>
<b>11:50-12:00 pm</b>	<b>Closing Comments, <i>Amita Verma, Director of the Cornell Office of Research Integrity and Assurance (ORIA)</i></b>
<b>12:00-12:30 pm</b>	<b>Optional Pizza Lunch (outside if weather permits)</b>

*Sponsored by The Office of Undergraduate Biology (OUB) in collaboration with The Office of Research Integrity and Assurance (ORIA) and The Office of Undergraduate Research*

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## CASE STUDIES

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### Case 1: Data Management and Manipulation

*(Case adapted from Teaching the Responsible Conduct of Research Through a Case Study Approach, a handbook prepared by the Association of American Medical Colleges (Korenman SG and Shipp AC, 1994). This case was contributed by Allan Shipp (acshipp@aamc.org) of the Association of American Medical Colleges. ©1994 For further information about credit and copyright, see: <http://research-ethics.net/topics/>)*

Alan Yeager has completed a series of experiments characterizing the receptor for a new class of hormones. During the course of his work, he studied binding characteristics and hormonal responses in tissue culture and in vitro, utilizing gels to characterize the molecular weights of receptor variants. This was exciting work for a second-year graduate student doing his first project. One day, Alan's laboratory chief asked him to prepare an abstract and poster for an upcoming meeting based on the work Alan had been doing. The abstract was due in one week. As Alan examined his accumulated data, he noted that a number of cell culture plates failed to respond to the hormonal stimulus and that there was considerable variability in the dose-response relationship. Furthermore, on re-examination, he noted that a number of his gels were not very aesthetic in appearance, yet he was sure that they demonstrated the molecular weight, agonist binding, and subunit characteristics of the receptor.

Alan mentioned his distress to Pam Alden, a fifth-year graduate student, who said, "Why don't you clean up your data? You'll never get the poster in good shape in time unless you do. And if you later want to publish the results, it will improve the chances of the manuscript being accepted if the data are cleaner. We always clean up the data around here." She then suggested that the four culture points failing to show a response be dropped because the cells were probably dead. She also pointed out that he might eliminate the top data point at the 45 minute interval as an outlier. She examined the gels and suggested retouching the negatives from which the prints were to be made, including the duplication of one of the nicer gel lanes to replace another that turned out poorly, but showed essentially the same result. "That will greatly improve the quality of your poster," she said. Alan replied, "Maybe I should repeat a few of the experiments or try to improve the culture conditions?" "No," said Pam, "If you're convinced of your results, why go through the time, expense, and uncertainty of more repetitions? You'll never complete the experiments in time for the abstract if you do that". Somewhat dismayed, Alan thanked her and turned back to his work.

### **Discussion Questions:**

- What do you think about Pam's comments and her suggestions for "cleaning up" the data?
- How should Alan go about determining which points to include and which to exclude?
- What other course(s) of action would you recommend to Alan?
- Would your reaction to this hypothetical case be different if Alan was preparing a manuscript for publication rather than an abstract and poster for a conference? If so, what is the difference?
- Pam's perception about improving the chances of publication by "cleaning up" the data is not uncommon. In the modern age, what do journals (i.e. editors and reviewers) do to try to ensure that data are not "cleaned up" in the sense used here?

## Case 2: Data Management and Manipulation

*(This case is from Moral Reasoning in Scientific Research developed by Muriel Bebeau, University of Minnesota, for a project entitled "Teaching Research Ethics: A Workshop at Indiana University". ©1995 Indiana University)*

Marty Brown, a plant biologist at a major research university, is investigating the potential utility of transgenic tobacco plants as "factories" for the production of foreign proteins. The potential benefit of this research to human medicine is clear. For instance, the non-plant gene that Brown is working with right now is human Factor VIII, a protein essential for blood clotting and the protein that most people with hemophilia lack.

In his current experiment, Brown has introduced a construct of the Factor VIII gene into tobacco and has 100 transgenic plants that he is studying in a developmental time course. He is following both Factor VIII production and the plants' growth to assess the effect of the foreign gene on the plant's development, and vice versa. Brown is excited about the success of his experiment thus far, and he feels that the potential uses for his findings make it imperative that he publish as soon as possible. A disease-free, inexpensive source of Human Factor VIII would be of great benefit to hemophiliacs, who run the risk of contracting disease from plasma-derived sources and who must find a way to pay about \$300,000 per year for their treatment. The urgency is all the more real to Brown, whose infant son is a hemophiliac. The sooner Brown's promising results are published, the sooner other scientists will be able to follow his line of work, and the sooner his discovery can have a practical, clinical impact.

One Friday, late in January, Brown checks on the 100 transgenic tobacco plants that have now been in the greenhouse for about a month. He discovers that twelve of them are beginning to look sickly. Their leaves are drooping a bit and turning yellow on the edges. He records this in his notebook, and also notes that all of these plants are close to the door. Later, in the lab, when he checks his previous results, he finds that these twelve plants have been producing Factor VIII at a consistently higher level than the other plants. Only one other plant had Factor VIII in this range, although quite a few came close. Feeling pressed for time, Brown decides not to investigate the cause of the poorer growth of the twelve plants any further. He concludes that because they happen to be near the greenhouse door, they have been repeatedly exposed to lower temperatures than the other plants, and that this is the problem. He records this conclusion in his notebook along with the other entries.

Early the following week, Brown is working on integrating his most recent transgenic plant data into the first draft of the manuscript on which he is working. He has entitled it "Human Factor VIII Production in Transgenic Tobacco Has No Deleterious Effect on Plant Growth." When Brown comes to the data on the twelve sickly plants, he considers whether he should exclude these plants from his analysis. He thinks that doing so would be justified because of the plants' proximity to the greenhouse door. In addition, the paper would be more impressive without the uncertainty associated with the data from these plants. He weighs the relevance of the data from those twelve plants against the principle that there is nothing wrong with excluding outliers and irrelevant data. Besides, he thinks these results are too important to risk letting them get held up in the review process.

### **Discussion Questions:**

- Should Brown leave out the data from those twelve plants? Why or why not?
- What is different in this case compared with the first case involving Alan Yeager?

### Case 3: Data and Notebook Ownership

*(This case is from Moral Reasoning in Scientific Research developed by Muriel Bebeau, University of Minnesota., for a project entitled "Teaching Research Ethics: A Workshop at Indiana University". © 1995 by Indiana University)*

Jessica Banks, a Ph.D. student in Professor Brian Hayward's lab, has recently defended her dissertation and is now ready to file it and leave for her new job. During her second year, when starting research in Hayward's lab, Banks divided her time among three projects. Then in her third year, after consultation with Hayward, she decided to continue and expand upon one of the three lines of investigation for her dissertation research. This was also the project most closely related to Hayward's grant at the time. Later, Banks's experimental plan and early results were included in Hayward's grant renewal. The other two promising lines of research were left incomplete.

Banks's new job is a tenure-track position in a mid-sized western liberal arts college. Shortly before leaving for her job, she comes into the lab to pick up her notebooks. Although her new faculty position will place a heavy emphasis on teaching, she is looking forward to continuing to do some research as well. In particular, she is eager to pick up where she left off with the two uncompleted projects she worked on before.

Professor Hayward meets Banks on her way into the lab, and their genial conversation abruptly changes when she mentions she has come to take her notebooks. Hayward exclaims, "You can't take those notebooks away — they belong to the lab!" Banks is confused. "But I did the work, and I wanted to follow up on it. I can't do that without the notebooks."

Professor Hayward is adamant. "I'm sorry, but you should understand this. This lab is a joint enterprise, and all the work you did was funded by money I brought in via grants. The notebooks don't belong to you, nor to me; they belong to the lab, and the work will be continued in this lab. I've already talked to one of the new students about working on those projects this fall." Banks, seeing her plans fall apart around her, protests, but Hayward is implacable. After a few minutes, she stalks away, without the notebooks.

Later that afternoon, Banks gets together with her classmate Paul Larson, and during their conversation, she tells him about her run-in with Hayward. "Look," says Larson. "Hayward has no right to deny you access to the information in the notebooks. Even if the books should remain in the lab, you did the work that generated all the data." "I know!" says Banks. "But Hayward wouldn't listen to that argument when I made it." "Here's my suggestion," says Larson after some reflection. "Just stop by the lab and photocopy the books some time during the weekend. I happen to know Hayward will be out of town, so he'll never know. That's the fair thing to do: He gets to keep the notebooks in his lab, and you get a copy of the data you collected."

Banks seems uncertain, but says she'll think about Larson's suggestion and decide before the weekend.

#### **Discussion Questions:**

- Should Banks photocopy the notebooks? Why or why not?
- Can you think of another approach Jessica might take to get copies of the notebook?
- How might this conflict have been avoided in the first place?