

# 2018 Responsible Conduct of Research Symposium

Monday January 22, 2018, Warren Hall  
Case Studies

---

## Case 1: Barking Up the Wrong Tree? Industry Funding of Academic Research<sup>1</sup>

Brian Schrag,<sup>α</sup> Gloria Ferrell,<sup>β</sup> Vivian Weil,<sup>γ</sup> Tristan J. Fiedler<sup>δ</sup>

Association for Practical and Professional Ethics,<sup>α</sup> Duke University,<sup>β</sup> Illinois Institute of Technology,<sup>γ</sup> University of Miami<sup>δ</sup>

*Science and Engineering Ethics, Volume 9, Issue 4, 2003, p. 569 - 582*

Nellie Shepherd is a graduate student at a large Midwestern university working with a group of graduate students and postdoctoral fellows in the lab of Dr. Thomas Katz. The primary focus of the lab group's research is various aspects of the fate, transport and biological effects of 1, 3, 5-trimethyltriazinetriene (TTT) in aquatic systems. TTT is a by-product of several chemical manufacturing processes and is extremely difficult to remove from wastewater. Katz, a well-established scientist, is internationally known for his work on TTT. Much of his current research is funded on an annual basis by a consortium of chemical companies that generate wastewater containing TTT. Katz has the highest funding level and best equipped laboratory in the department; however, his students find him distant and communication difficult.

For her dissertation research, Nellie is attempting to determine what environmental factors have contributed to the decline of native fish species downstream from the point at which wastewater from several chemical companies is released into the Missouri River. In addition to TTT, the wastewater contains numerous other substances, including dipropyl phthalate (DPP). At present, no regulatory levels have been established for TTT or DPP; for a variety of reasons, there is much public interest in TTT whereas DPP has been largely ignored.

In a field survey, Nellie found large differences between enzyme levels in fish collected upstream and downstream from the area where wastewater enters the river, with the lowest levels in fish collected closest to the source of wastewater. Short-term experiments conducted by Katz's lab several years earlier did not indicate that native fish species were adversely affected by exposure to TTT, although enzyme levels were not analyzed. An extensive literature search yielded a series of papers indicating that exposure to DPP decreased enzyme levels in several European fish species and linking low enzyme levels to increased susceptibility to disease. Nellie is concerned that DPP, rather than TTT, is the cause of the biochemical changes she has observed and designs a series of simple lab experiments to determine whether exposure to DPP decreases enzyme levels in native fish species.

Nellie arranges a meeting with Katz in which she summarizes the papers she has found showing effects of DPP similar to those she has observed. She also describes the experiments she feels are needed to determine if DPP decreases enzyme levels. Katz tells her that she is barking up the wrong tree and insists that she limit her research to the effects of TTT because that is what the lab's funding is designated for. Nellie is surprised by Katz's response to her proposed experiments. When she tries to pursue the issue, she is abruptly dismissed.

Nellie discusses her meeting with Katz with several members of the lab group. Everyone she talks to feels that her concerns about DPP are valid. Several weeks later, one of the postdocs tells her that Katz confided in him that he didn't want Nellie to "open up another can of worms for the chemical industry." Nellie knows that loss of the chemical industry funding would be devastating to the lab. She realizes that she can probably complete her dissertation without addressing

---

<sup>1</sup> The complete six-volume set *Research Ethics: Cases and Commentaries* can be obtained from the Association for Practical and Professional Ethics, Indiana University, Bloomington, Indiana. Individual cases can also be found on-line at <http://www.onlineethics.org/reseth/scenarios.html>. The scenario, 'Barking Up the Wrong Tree? Industry Funding of Academic Research' is published by permission of the Association for Practical and Professional Ethics.

# 2018 Responsible Conduct of Research Symposium

Monday January 22, 2018, Warren Hall

## Case Studies

DPP. However, if DPP has caused the decline of native fish species, this issue needs to be addressed quickly because several of the fish species are considered to be on the verge of extinction. Nellie has the materials and reagents she needs to conduct the experiments evaluating DPP.

### Discussion Questions

1. Should Nellie proceed with the experiments evaluating DPP? Why or Why not?

### Scenario 1

Nellie decides to obey Katz's instructions. She does not include an evaluation of DPP in her work. She refocuses her dissertation topic, limiting it to the effects of exposure to TTT. Results of her work support the preliminary experiments and indicate that TTT has no major adverse effect on the fish species studied. Katz asks Nellie to include an evaluation of the effects of elevated water temperature on fish enzyme levels.

Discharge of water used for cooling by an electrical power plant has caused a 3o C increase in the average annual water temperature of the Missouri River in Nellie's study area.

### Discussion Questions

2. Has Nellie compromised her integrity by omitting DPP from her research?
3. In what way is the analysis of this case changed by Katz's request that temperature be evaluated?

### Scenario 2

Nellie proceeds with the experiments evaluating the effects of DPP on two fish species. Her results indicate that exposure to DPP results in decreased enzyme levels.

Now that she has the additional data, Nellie recalls Katz's irritation when she initially suggested evaluating DPP. Because of her apprehension, she decides not to tell Dr. Katz about these experiments and proceeds with her dissertation research as described in Scenario 1.

### Discussion Questions

4. By conducting the experiments and not divulging the results, has Nellie compromised her integrity more than in Scenario 1?
5. Was she wrong to have conducted these experiments using resources obtained from chemical consortium funds earmarked for research on TTT?

### Scenario 3

Nellie decides to tell Katz the results of the experiments with DPP. He becomes irritated when she admits that she has conducted the experiments, and he informs her that if she wishes to continue her investigation of DPP, she will need to find another source of funding and another laboratory to work in.

### Discussion Questions

6. Is Katz's behavior appropriate? Note: The research of some of the other graduate students in the lab group involves compounds other than TTT.
7. Would Nellie's behavior be considered differently if she were working for a consulting firm with Katz as her supervisor rather than as a graduate student? How might public perception of her work change in this setting?

# 2018 Responsible Conduct of Research Symposium

Monday January 22, 2018, Warren Hall

Case Studies

## Case 2: What's in an agreement?

*Amita Verma, Mary-Margaret Klempa, Cornell University*

Andrew Smith is an Assistant Professor of Nutrition at Great Western University (GWU). He studies the effect of infant nutrition on cognitive development, particularly on attention, learning, and retention through childhood, adolescence and early adulthood. His research program is growing, he has a couple of PhD students and funding from the NIH and USDA, however, he thinks that he needs one major project to clearly distinguish his research.

One day Andrew receives an email from Cindy Melford, asking for a phone call to discuss a collaboration. Cindy and he were Ph.D. students together 20 years ago. Cindy works at Nutriscience, which produces formula and food supplements for infants and young children. Andrew has followed her career on LinkedIn and knows that she has steadily moved up in the company and now heads up their R&D division.

A week later during their call, after catching up about families and careers, Cindy gets serious. "Andrew, I am sitting on a gold mine of data that we don't have the expertise in-house to analyze, and I would love for you to help us make sense out of it." About 15 years ago, Cindy tells him, NutriScience launched a program where they offered customers who had bought their infant formula a decent amount of compensation to enroll in a study. Each month the families would receive a questionnaire about foods that their infants and children were eating, feeding schedules, and food related traditions and practices in their families. The surveys had a battery of questions on demographics, family history, housing and family income, the physical development of the children, school performance and several standard cognitive measures. Families were compensated as long as they continued to participate in the program.

Data from this program continued to come in over the years. The person who started the program had left a long time ago, however, the R&D department continued to send questionnaires, maintain the study database, and compensate the participants. When Cindy learned of the study, and the significant past and continuing cost, she was astounded to find that the data, which spanned 15 years, was incredibly complete and of excellent quality. Cindy is hoping that Andrew would be willing to consider collaborating with NutriScience on this project.

Andrew can't believe what he is hearing. This type of data would indeed be a gold mine, and is unprecedented in its longitudinal nature, breadth, and completeness. This would be an incredible enhancement to his research program and he is certain it would assure a successful tenure review. Cindy and Andrew set up two more meetings later that week to talk about the data and the possible approaches to analysis, hypothesis and angles that this research could take. The more they talk, the more excited they both become. They agree on the research approach and a rough estimate of costs. Cindy tells him that her people will set up the agreement and be in touch.

A few days later Andrew receives a packet in the mail addressed to him with an agreement for a three year collaboration for \$1.2 million. His name is on the signature line for GWU and Cindy's name and signature are on the agreement for NutriScience. There is a sticky note with a personal message from Cindy, expressing her excitement about their collaboration and inviting him to Boston to visit the company headquarters at the company's expense to discuss the project.

Andrew is ecstatic. He has never signed an agreement before, so Andrew decides to consult with his Department Chair, Maria Lopez, (and also, to let her know of this amazing win!) just in case she needs to also sign something. Andrew likes Maria and trusts her counsel. Upon hearing about the project, Maria congratulates him and asks to look at the agreement. As she reads the agreement, Maria becomes quiet and asks Andrew to contact Matt in the University's Office of Sponsored Programs to ask him to review it. Andrew is concerned that this additional bureaucracy will delay things, and

# 2018 Responsible Conduct of Research Symposium

Monday January 22, 2018, Warren Hall

## Case Studies

Maria tells him that she understands, but must insist on following university processes. Andrew sends an email to Matt with the agreement attached, asking him to review it ASAP because he wants to book tickets so he and his student can visit the company in Boston right away, get the data and start the work.

The next morning Andrew receives an email from Matt asking to meet. When Matt arrives with the agreement, Andrew notices that several pages have post-its, red lines and comments. “Here we go”, Andrew thinks, “mountains of paperwork, hours of nitpicking, and annoying jargon begin.” Matt asks if Andrew sent a proposal to the company for the project, and Andrew explains that no proposal was necessary, because Cindy and he had agreed on the project over the phone and she had promised to provide the money to fully fund the project.

Matt goes on to say that according to the agreement, Nutriscience will provide selected data to GWU. This is surprising to Andrew, because his understanding was that Cindy would provide the entire dataset so that Andrew could understand it fully and decide what to do with it. The agreement also states that payment from NutriScience will be conditional on satisfactory results, and that analysis and results must be sent to Nutriscience for review prior to publication. Nutriscience will retain the right to require that the research results be kept confidential, and to approve manuscripts prior to their publication. The agreement further states that publications arising from the research may not reveal the name of the company as the data provider.

Andrew is puzzled by the terms, which seem to indicate a level of control that he had not expected. Although he trusts Cindy fully, Andrew is troubled by some of the terms.

Toward the end of the meeting, Matt informs Andrew that the terms are not acceptable to the University and will need to be revised. Matt tells Andrew that the project might need approval from the IRB, because there seems to be identifying information in the data. He also tells Andrew that Andrew cannot sign the agreement because only someone in the central office is allowed to do so. Inside, Andrew is seething about the paperwork and delays and worried that this immense opportunity might get lost in this bureaucratic mumbo jumbo.

Later that day, Andrew calls Cindy and tells her about the issues Matt raised, and she laughs. “Just as I thought, Andrew! These agreements and forms are just for the lawyers so that they can feel they have control. I would not dream of micromanaging your research. I have enough to do in my day job. Just sign the document, like I did. The two of us can figure this out once the lawyers are out of the picture. This will be such an amazing project. Aren’t you excited? Don’t you trust me?” “Yes, I do,” Andrew says, but he lets Cindy know that the University will not sign the agreement with these terms. Cindy pauses and when she responds her voice is tense, “You know, Andrew, this is our standard R&D agreement. Making any changes at this point will definitely delay the project, and once our lawyers get involved, who knows if they will even agree to any changes. I suggest you sign the agreement as is.”

“Why don’t you want your company’s name acknowledged in publications?” Andrew asks. Cindy replies “Because then you and I will both be on the defensive, trying to convince people that the company did not influence the study. You know how the media is: always twisting everything to make corporations look like the Big Bad Wolf. I don’t need that kind of publicity. This is your work. Plus I don’t want the families to freak out. Some of them may not remember that we told them we are going to use the data for research.” Andrew and Cindy agree to talk again the next day.

Andrew is really worried. On the one hand he completely understands that Cindy has no interest in manipulating his work and that she is in it for the research. On the other hand, the agreement just seems to want to tie his hands, although Cindy is clear that any changes could doom the project. He cannot let this opportunity slip by. This is the perfect project

# 2018 Responsible Conduct of Research Symposium

Monday January 22, 2018, Warren Hall

## Case Studies

and exactly what he needs at this stage of his career. Andrew is not sure what to do, and he asks Matt to come and meet with him the next day.

### Discussion Questions

1. Do you see problems in the terms that Matt highlighted for Andrew? What are they and why do you think they are problems?
2. Should Andrew have the authority to sign the agreement on his own without the involvement of the Office of Sponsored Programs? Why or why not?
3. Do you have concerns that Andrew will receive a limited set of data from the company? If so, why, and how can those concerns be mitigated?
4. Would you have concerns about the company's hesitation to have its name associated with the study?
5. What kind of issues might the IRB worry about in this project?
6. What should Andrew do?

---

---

# Barking Up the Wrong Tree? Industry Funding of Academic Research

## A Case Study with Commentaries

Brian Schrag,<sup>α</sup> Gloria Ferrell,<sup>β</sup> Vivian Weil,<sup>γ</sup> Tristan J. Fiedler<sup>δ</sup>

Association for Practical and Professional Ethics,<sup>α</sup> Duke University,<sup>β</sup> Illinois Institute of Technology,<sup>γ</sup> University of Miami<sup>δ</sup>

---

---

**Key Words:** Conflict of interest; Industry funding of research; laboratory management; research design; withholding scientific findings; responsibility for the environment; advisor-advisee communication.

**Abstract:** *This case raises ethical issues involving conflicts of interest arising from industrial funding of academic research; ethical responsibilities of laboratories to funding agencies; ethical responsibilities in the management of a research lab; ethical considerations in appropriate research design; communication in a research group; communication between advisor and graduate student; responsibilities of researchers for the environment; misrepresentation or withholding of scientific results.*

**Context of the Case Study:** Over a six year period, the Association for Practical and Professional Ethics has had two grants from the National Science Foundation (NSF Grant Number SBR-9241897 and NSF Grant Number SES-9817880) to carry out a project in Research Ethics Education for promising young graduate students and postdoctoral fellows in the physical and natural sciences and engineering. During that period we have worked with 96 participants who represented 67 different disciplines or subdisciplines, and 59 different universities.

As a pedagogical exercise, within that project we asked each participant to prepare a short case study on some issue of research ethics that was of special interest to him or her. Those cases provided opportunities for discussion among participants and faculty regarding identification of ethical issues in research, practical ethical reasoning in resolving ethical problems in research, application of paradigm cases in the history of research ethics, considerations from ethical theory as well as pedagogical considerations in the teaching of research ethics. Participants quickly recognized the value of these interdisciplinary discussions and learned from the insights and practices of other disciplines. In light of these discussions, cases underwent multiple revisions over half a year.

The cases reflect the interests and unique perspective of graduate students and postdoctoral students engaged in the research process and hence some cases may raise some issues that no longer preoccupy seasoned researchers. Seasoned researchers may nevertheless find the cases relevant for instruction of their advisees and colleagues. We have been surprised at the number of researchers using the cases who volunteered that the cases have revived for them troubling ethics issues that arose

---

---

**Address for correspondence:** Brian Schrag, Ph.D., Executive Secretary, Association for Practical and Professional Ethics, 618 East Third Street, Bloomington, IN 47405, USA; email: bschrag@indiana.edu.

Published by Opragen Publications, POB 54, Guildford GU1 2YF, UK. <http://www.opragen.co.uk>

in their early years as researchers. They have also indicated that the cases can provide a safe vehicle for the discussion of sensitive ethical issues in their own laboratories. The cases reflect deliberation in an interdisciplinary setting. This allowed participants to learn from colleagues in other disciplines and to gain a wider perspective on the issues in their own discipline than they might have had the discussion been conducted only within their own department. We had not anticipated the strong interest in the cases as teaching material; they have proved suitable for use in both undergraduate and graduate classrooms.

Initially each case was accompanied by a commentary by one participant and one faculty member. An additional, final commentary has been prepared especially for each of these cases appearing in *Science and Engineering Ethics*.<sup>a</sup>

## Case Study: Barking Up the Wrong Tree? Industry Funding of Academic Research<sup>b</sup>

Nellie Shepherd is a graduate student at a large Midwestern university working with a group of graduate students and postdoctoral fellows in the lab of Dr. Thomas Katz. The primary focus of the lab group's research is various aspects of the fate, transport and biological effects of 1,3,5-trimethyltriazinetriene (TTT) in aquatic systems. TTT is a by-product of several chemical manufacturing processes and is extremely difficult to remove from wastewater. Katz, a well established scientist, is internationally known for his work on TTT. Much of his current research is funded on an annual basis by a consortium of chemical companies that generate wastewater containing TTT. Katz has the highest funding level and best equipped laboratory in the department; however, his students find him distant and communication difficult.

For her dissertation research, Nellie is attempting to determine what environmental factors have contributed to the decline of native fish species downstream from the point at which wastewater from several chemical companies is released into the Missouri River. In addition to TTT, the wastewater contains numerous other substances, including dipropyl phthalate (DPP). At present, no regulatory levels have been established for TTT or DPP; for a variety of reasons, there is much public interest in TTT whereas DPP has been largely ignored.

In a field survey, Nellie found large differences between enzyme levels in fish collected upstream and downstream from the area where wastewater enters the river, with the lowest levels in fish collected closest to the source of wastewater. Short-term experiments conducted by Katz's lab several years earlier did not indicate that native fish species were adversely affected by exposure to TTT, although enzyme levels were not analyzed. An extensive literature search yielded a series of papers indicating that exposure to DPP decreased enzyme levels in several European fish species and linking low enzyme levels to increased susceptibility to disease. Nellie is concerned that DPP,

---

a. The complete six-volume set *Research Ethics: Cases and Commentaries* can be obtained from the Association for Practical and Professional Ethics, Indiana University, Bloomington, Indiana. Individual cases can also be found on-line at <http://www.onlineethics.org/reseth/scenarios.html>.

b. The scenario, 'Barking Up the Wrong Tree? Industry Funding of Academic Research' is published by permission of the Association for Practical and Professional Ethics.

rather than TTT, is the cause of the biochemical changes she has observed and designs a series of simple lab experiments to determine whether exposure to DPP decreases enzyme levels in native fish species.

Nellie arranges a meeting with Katz in which she summarizes the papers she has found showing effects of DPP similar to those she has observed. She also describes the experiments she feels are needed to determine if DPP decreases enzyme levels. Katz tells her that she is barking up the wrong tree and insists that she limit her research to the effects of TTT because that is what the lab's funding is designated for. Nellie is surprised by Katz's response to her proposed experiments. When she tries to pursue the issue, she is abruptly dismissed.

Nellie discusses her meeting with Katz with several members of the lab group. Everyone she talks to feels that her concerns about DPP are valid. Several weeks later, one of the postdocs tells her that Katz confided in him that he didn't want Nellie to "open up another can of worms for the chemical industry." Nellie knows that loss of the chemical industry funding would be devastating to the lab. She realizes that she can probably complete her dissertation without addressing DPP. However, if DPP has caused the decline of native fish species, this issue needs to be addressed quickly because several of the fish species are considered to be on the verge of extinction. Nellie has the materials and reagents she needs to conduct the experiments evaluating DPP.

### **Discussion Questions**

1. Should Nellie proceed with the experiments evaluating DPP?
2. What issues are involved in such a decision?

### **Scenario 1**

Nellie decides to obey Katz's instructions. She does not include an evaluation of DPP in her work. She refocuses her dissertation topic, limiting it to the effects of exposure to TTT. Results of her work support the preliminary experiments and indicate that TTT has no major adverse effect on the fish species studied. Katz asks Nellie to include an evaluation of the effects of elevated water temperature on fish enzyme levels. Discharge of water used for cooling by an electrical power plant has caused a 3° C increase in the average annual water temperature of the Missouri River in Nellie's study area.

### **Discussion Questions**

3. Has Nellie compromised her integrity by omitting DPP from her research?
4. In what way is the analysis of this case changed by Katz's request that temperature be evaluated?

## Scenario 2

Nellie proceeds with the experiments evaluating the effects of DPP on two fish species. Her results indicate that exposure to DPP results in decreased enzyme levels.

Now that she has the additional data, Nellie recalls Katz's irritation when she initially suggested evaluating DPP. Because of her apprehension, she decides not to tell Dr. Katz about these experiments and proceeds with her dissertation research as described in Scenario 1.

### Discussion Questions

5. By conducting the experiments and not divulging the results, has Nellie compromised her integrity more than in Scenario 1?
6. Was she wrong to have conducted these experiments using resources obtained from chemical consortium funds earmarked for research on TTT?

## Scenario 3

Nellie decides to tell Katz the results of the experiments with DPP. He becomes irritated when she admits that she has conducted the experiments, and he informs her that if she wishes to continue her investigation of DPP, she will need to find another source of funding and another laboratory to work in.

### Discussion Questions

7. Is Katz's behavior appropriate? Note: The research of some of the other graduate students in the lab group involves compounds other than TTT.
8. What is the primary source of Nellie's conflict? How might this conflict be avoided?
9. What constraints on a graduate student's research are appropriate? What constraints are not appropriate?
10. Is it appropriate for Katz to accept funding that is restrictive (either explicitly or implicitly)?
11. Is it appropriate for Katz to allow Nellie to select a dissertation topic that could potentially conflict with funding constraints? How much latitude should a student be allowed in choice of a research topic?
12. Would Nellie's behavior be considered differently if she were working for a consulting firm with Katz as her supervisor rather than as a graduate student? How might public perception of her work change in this setting?

## **Commentary on ‘Barking Up the Wrong Tree? Industry Funding of Academic Research’**

**Gloria Ferrell**, *Duke University*

---

The underlying issue in this case study is the conflict of interest that arises from the impact of private industry funding on Katz's behavior as an academic researcher. The basis for this conflict of interest, as described by Pritchard,<sup>1</sup> is the influence that one position (affiliation with private industry) has on another position (a scientist's behavior and judgment). This case is presented from the perspective of a graduate student to illustrate some of the problems that conflicts of interest can create for students and to generate discussion about some of the less commonly considered aspects of conflicting interests.

Discussions of conflicts of interest typically address issues of data falsification or bias and financial gain rather than influences on experimental design or, in this case, selection of experiments. Whereas falsification or bias of data can be discovered by duplication of experiments, it is more difficult to detect the influence a conflict of interest may have on experimental design.

Some university researchers have turned to private industry as a funding source because availability of funds from many government sources has decreased and competition for remaining funds has correspondingly increased. Industry stands to benefit from such funding arrangements in that research conducted by academic institutions is generally perceived by the public as more objective than similar work performed by consultants or done in house. It may also be less expensive for industry to fund universities than to hire consultants. Whether or not industry expects recipients of funds to have the allegiance expected of hired consultants, a researcher's perception of such expectations could affect his or her objectivity.

Conflict of interest is not obvious in this case. Had it not been for Katz's comment to the postdoc, it would appear that Nellie's proposed work would deviate from that of the lab and possibly from Katz's area of expertise. Thus, the primary problem would arise from Nellie's work being inappropriate for Katz's lab. However, in addition to his comment to the postdoc, Katz's conflict of interest is made apparent by his suggestion that Nellie evaluate effects of water temperature in addition to those of TTT (Scenario 1). By including elevated water temperature (a potential problem not associated with the chemical industry) and excluding DPP (which is associated with the chemical industry) from Nellie's study, Katz seems to show a bias in favor of the study of factors that could vindicate (or at least not implicate) the chemical industry in the decline of fish species. If indeed funding has been designated solely for research involving TTT, it would seem that Katz could be considered to have misused funds by having Nellie evaluate the effects of water temperature (Scenario 1) and having other students work on compounds other than TTT (Scenario 2). Thus, rather than misusing funds for research involving compounds or factors other than TTT, Katz's choice of what to study appears to be influenced by his concern for the interests of the chemical consortium. Concerns of this nature would be expected of consultants hired by the

chemical consortium, but they are not generally expected of university based researchers.

None of the information provided in this case indicates that the chemical consortium expects the research conducted by Katz's lab to be less than totally objective. However, because the lab's primary source of funding is the chemical consortium and funding is renewed annually, Katz's concern about continued funding is understandable. Perhaps he can justify denying Nellie funding to evaluate DPP because he has been able to support the majority of his lab's research without any such conflicts. Thus, one could rationalize that much more good than bad has resulted from the chemical consortium funding.

The funding arrangement with the chemical consortium is lucrative, as indicated by Katz's well equipped lab, which can make it difficult for Katz to be objective about the potential for conflicts of interest. Because of the financial advantages offered by industrial funding, it's important for academic institutions to establish an external (nondepartmental) review system to evaluate appropriateness of funding. Requiring longer term funding arrangements (perhaps three to five years) would also provide increased financial stability and perhaps lessen perceived pressures.

Secondary issues in this case include Katz's responsibilities to his student Nellie and her responsibilities to Katz, as well as the general responsibilities of scientists. As this case is written, Katz has allowed Nellie to get into a difficult situation. Regardless of what she does, she loses either her enjoyment of science, her integrity or her funding. Perhaps by restricting her choice of dissertation topics, Katz could have avoided many of the problems presented in this case. However, it seems inevitable that at some point, a seemingly uncontroversial topic would take on a direction that could be perceived as being potentially deleterious to members of the chemical consortium.

In addition to being contrary to basic principles of science, a significant concern, particularly over the long term, is the potential effect of Katz's biased behavior on the public's perception of science. Blumenthal<sup>2</sup> describes the importance of public trust to the scientific enterprise. Similarly, Frankel<sup>3</sup> writes that the public perceives and characterizes present-day science as objective and disinterested. Actions of scientists that undermine these principles and perceptions could result in loss of public trust and ultimately diminished government funding.

Environmental concerns are another issue in this case. The potential loss of species is a significant concern, perhaps a greater concern than obtaining a degree or renewed funding. If indeed DPP is adversely affecting native fish, and based on information in the case, it is incumbent on Nellie (as well as upon Katz) to express her concerns about DPP to someone who can (or will) do the necessary research.

Environmental concerns could well take precedence over any others. Nellie could change schools or live her life without an advanced degree; Katz could find other funding if the chemical consortium opted to discontinue his funding; and lab employees could find other jobs. Once gone, however, a species cannot be recreated.

## REFERENCES

1. Pritchard, M. S. (1996) Conflicts of Interest: Conceptual and Normative Issues. *Academic Medicine* 71: 1305 1313.
2. Blumenthal, D. (1996) Ethics Issues in Academic Industry Relationships in the Life Sciences: The Continuing Debate. *Academic Medicine* 71: 1291 1296.
3. Frankel, M. (1996) Perception, Reality, and the Political Context of Conflict of Interest in University Industry Relationships. *Academic Medicine* 71: 1297 1304.

## **Commentary on ‘Barking Up the Wrong Tree? Industry Funding of Academic Research’**

**Vivian Weil**, *Illinois Institute of Technology*

---

This story is told from the perspective of a graduate student who is disturbed because she suspects that her lab director’s actions are affected/biased/influenced by a conflict of interest; the conflict causes him to steer her away from the research she thinks she should pursue. The case effectively brings out how integral ethics is to scientific research. What is appropriate to investigate is a central ethical concern in this situation. At the same time, the case allows focus on ethical questions about the management of a research lab; communication needs in a research group; relations between the lab director and a dissertation student; the responsibilities of each; the responsibilities of a postdoc, and others in the lab; the influence of the funding source on the research; the integrity of the researcher; and responsibilities toward the environment. The short narrative effectively presents the situation with its ambiguities.

The lab director, Dr. Thomas Katz, has won an international reputation and acquired the funding for a group of graduate students and postdocs and for a well-equipped lab. However, he comes across to students as distant and inaccessible. The graduate student at the center of this case, Nellie Shepherd, is engaged in dissertation research to determine environmental factors that have contributed to a decline of fish species that have been exposed to wastewater from chemical plants. Her disagreement with her lab director centers on what possibly damaging substance in the wastewater should be the focus of her investigation. One substance, TTT, has attracted public attention, has already been investigated to some extent by this lab, and has not been implicated in damage to fish. In addition, the lab gets its funding from a consortium of chemical companies that generate wastewater containing TTT, and the funds are designated for studying the effects of TTT.

Nellie’s reading of the literature has convinced her that DPP, another substance in the wastewater, may be the culprit. She designs some experiments to test her hypothesis. Katz refuses to approve Nellie’s proposed experiments, saying there is no need to evaluate DPP when the funding has been given for studying TTT, and he curtly cuts off further discussion.

Katz’s apparently cold and discourteous treatment of Nellie, at a sensitive juncture in determining the scope of her dissertation research, creates a highly unsettling situation for Nellie. His failure to show interest in her proposal could well undermine her self-confidence as a researcher. His unwillingness to discuss fully the rationale for rejecting research on DPP has evidently damaged Nellie’s trust in Katz. She is ready to believe that his judgment is biased by dependence on the consortium for funding, and she is receptive to a postdoc’s gossip supporting her belief. As she considers that DPP

might be the cause of the looming disappearance of fish species and that she has on hand the materials needed to conduct the necessary experiments, her distress increases.

The control of funding needed to conduct research gives lab directors great power in carving out dissertation projects. Presumably, a process of negotiation usually occurs so that a student contributes to defining the scope of the research and comes to believe in and identify with the project. Ordinary respect for persons dictates that such a process should take place, and pedagogical considerations weigh in as well. The negative consequences of failure to show respect and discuss the rationale for the research are evident in this case. Nellie believes that following Katz's instructions may compromise her own integrity, and that serious harm to the environment may come about as well. We do not know if she is correct, nor does she, but Katz has created a predicament for her.

If Katz had discussed the funding and the scope of their research earlier (in a lab meeting, for example), he might have headed off this crisis for Nellie. By considering whether preliminary investigation of DPP might be justified under the terms of the funding or whether mention of the need to follow up on DPP might be justified in Nellie's report of the work she does complete, he might have performed better as a scientist and teacher and forestalled her suspicions. As it is, Nellie is entitled to her concern that Katz has a conflict of interest that biases his judgment in denying approval to investigate DPP. However, the situation is ambiguous; it may be that he has valid reasons but is too peremptory to convey them.

The postdoc's involvement raises additional questions about how the lab director operates, especially in communicating with the members of the research group. Is the postdoc to be trusted? Has the postdoc correctly interpreted what the lab director allegedly said? Does Katz really think the lab would serve the chemical companies well by refraining from pursuing investigation that would "open up another can of worms"? Nellie should not have to rely on the postdoc for an answer to this question. The lab should have regular channels of communication that leave less to gossip, rumor and surmise.

The lab's posture toward the consortium that supports the research should have been made explicit and explained to the members of the group when the funding came in and should be conveyed clearly to new members. These are reasonable expectations for a responsibly managed university research group. The university's commitment to the independence of university research is very valuable to society, and the university should have clear policies protecting the independence of research funded by private business organizations. Research conducted within business organizations also must meet reasonable standards of independence to be trustworthy, but business organizations do not make the same public commitment to the independence of their research that universities do.

In Scenario 1, Katz asks Nellie to include investigation of elevated water temperature on fish enzyme levels. Consideration of this factor is legitimate, but the request raises a question because it is not obvious that study of temperature is justified under the terms of the funding. Nellie's suspicions of conflict of interest are fueled, as well as, in all likelihood, a sense that her own idea of investigating DPP is not

adequately appreciated. Whether Nellie's integrity is at stake is not clear, for she does not know why Katz has slighted her proposal.

If, as in Scenario 2, Nellie goes ahead with her experiments, finds that fish enzymes are indeed decreased, and does not report her findings, she is at fault on two counts. Without approval, she carries out research using funding presumably not designated for these experiments, and she holds back the results. She should not go this route.

In Scenario 3, Nellie reports her findings, and Katz is irritated. That reaction to her going ahead without approval is not out of line. It might not even be out of line to tell her courteously that if she wants to work on DPP, she must find other funding and another lab. However, Katz allows other students to work on other compounds. So Nellie is owed an explanation of his refusal to approve her study of DPP. Her suspicions may be correct, but they may not be.

It seems that Nellie must either follow Katz's instructions or find another lab in which to pursue the research that seems important to her. Perhaps the fault is not entirely Katz's. We do not know how others in the lab, who think Nellie's concerns are valid, get along with Katz, and Nellie herself may not know. It would be useful to her to find out about their situations, how they deal with Katz. Could Nellie have opened a discussion about her goals and research interests with Katz (or another senior person who knows this lab) at an earlier point? She might have learned at the outset whether this lab was a good fit for her.

## Commentary on 'Barking up the Wrong Tree? Industry Funding of Academic Research'

**Tristan J. Fiedler**

*NIEHS\* Marine & Freshwater Biomedical Sciences Center, Rosenstiel School of Marine & Atmospheric Sciences, University of Miami*

---

"Barking up the Wrong Tree? Industry Funding of Academic Research" presents a realistic situation possessing several levels of ethical concerns. The case is of educational value to a broad range of scientists ranging from incoming graduate students to established researchers.

Of exceptional importance to researchers at an early stage in their scientific career is the potential ethical complexity that emerges when a graduate student "simply" follows the advice of her mentor. As such, the case accomplishes the task of provoking thought on ethical issues encountered during the routine practice of research.

Popular attention to research ethics tends to focus on blatantly reprehensible practices, including plagiarism, data fabrication, and falsification, all of which are defined as scientific misconduct. In contrast, the case, as presented here, apparently lacks such obviously wrong acts, and can promote effective discussion focusing on a variety of commonly observed, yet questionable research practices. Two of the concerns that emerge as the case unfolds, can be distributed into two broad areas:

- a. relationships within a research community
- b. methodology of science

The student relationship is especially important, but postdoc-research advisor relations and postdoc-student relations are also important to consider. Responsibilities and obligations between the university and the various members of research laboratory must also be addressed, as must the relationship between the funding source and the laboratory hired to carry out the specified research. More subtle issues include the responsibilities of scientists (including those of varying degrees of experience) for the natural environment. A second area of ethical concern highlighted by issues in this case is, as broadly defined, the methodology of science. Many questionable research practices, such as inappropriate experimental design, misrepresentation or withholding of scientific results, and conflict of interest are all potentially relevant in this case.

Prior to addressing the ethical issues relevant to this case, several details should be noted.

First, Nellie Shepherd is a graduate student in the laboratory of Dr. Thomas Katz, whose internationally renowned lab primarily studies TTT, a chemical found in aquatic systems.

---

\* NIEHS is an abbreviation for National Institute of Environmental Health Science.

1353-3452 © 2003 Opragen Publications, POB 54, Guildford GU1 2YF, UK. <http://www.opragen.co.uk>

Although the case indicates that Nellie believes that her dissertation need not address the secondary chemical, DPP, the actual amount of research experience she has is unclear. The reader is left to assume she is near the completion of her dissertation. If Nellie is just beginning her graduate studies, Dr. Katz's role as mentor may require more directed authority rather than allowing Nellie the freedom to pursue her own scientific interests.

A second unresolved issue deals with the nature of the financial support for both the laboratory as whole, and for Nellie in particular. The case states that much of Dr. Katz's current research funds are obtained from chemical companies that release TTT in the environment. Thus, a small portion may be derived from other sources not allied with the chemical industry. Similarly, the precise source and stipulations of the funding for Nellie's research is also unknown.

A third issue that remains unresolved is the projected time to extinction of the various endangered fish species. Months versus years may lead to quite different ethical dilemmas regarding if and when the DPP experiments should be conducted. These three issues, Nellie's research experience, the funding guidelines for her research, and the immediate threat of extinction will be incorporated in the commentary below and may serve as nucleation sites for discussion.

The relationship between student and thesis advisors is one of mutual commitment. The thesis advisor customarily oversees and directs the studies of the trainee. This interaction ideally will facilitate the scientific development of the student in the direction of more independent research. For her dissertation topic, Nellie Shepherd is attempting to determine the environmental factors related to the decline in native fish populations downstream of a wastewater release site on the Missouri River. She is unsure whether she should proceed with the DPP experiments which her lab director has insisted should not be done. If Nellie has already completed her dissertation proposal that specifically details the necessary experiments, then Dr. Katz may have validity in blocking the DPP experiments. As a mentor, he needs to train his students to execute and complete a statistically valid set of experiments rather than jump from one "hot" idea to the next. It is possible that Dr. Katz wishes Nellie's TTT study to be promptly completed, for both the success of her dissertation and the stipulations of his funding.

Dr. Katz is the scientific director of his laboratory and as such, has the authority to direct the experiments conducted therein. His experience and the lab's funding deal specifically with TTT, and he is entitled to keep the focus of his lab restricted to TTT. Furthermore, depending on the extent of Nellie's experience with her research topic, Dr. Katz may be correct in exercising his authority to keep his graduate student focused on one set of experiments until they are properly executed. Nellie herself recognizes that the DPP experiments are not essential for the success of her dissertation. Dr. Katz's large lab includes graduate students and postdocs, indicating that these early career scientists are eager to join his research team. Dr. Katz's suggestion to abandon the DPP studies may be in the best interest of Nellie in order that her studies under his supervision are promptly completed, allowing her to move forward in her scientific career. Nevertheless, even if Dr. Katz's decisions are in the best interest of Nellie, one

problem is the lack of communication between Katz and Nellie. Dr. Katz fails to clearly explain his rationale for prohibiting the DPP experiments. Regardless of Nellie's experience, she has attained the level of graduate student and should be given an explanation if only for her own education.

Since we do not know the amount of experience that Nellie has, we must also consider the possibility that she is a very senior graduate student, has worked for several years on her dissertation, and is essentially independent in her daily research. This scenario may offer some support for Nellie's disappointment in her thesis advisor, i.e., his failure to be a mentor. She may be trying to think and work independently, pursuing novel yet appropriate experiments focused on the subject matter at hand. Modern science encourages a variety of experimental approaches to answer specific questions, i.e. "by any means necessary". The case mentions that other graduate students study compounds other than TTT. Her extensive literature search, design of appropriate experiments evaluating the effects of DPP, and initiative to pursue a novel compound is commendable. Although factors such as her dissertation "deadlines" and funding stipulations may complicate matters, if Nellie is a senior graduate student who has demonstrated independent thought in experimental research, she may be completely justified in conducting the DPP experiments, albeit possibly outside of the immediate laboratory of Dr. Katz. If indeed her rationale is valid, as it appears to be, Nellie has the option of requesting permission to conduct the DPP studies in another laboratory in the department. This may limit Dr. Katz's "official" involvement for reasons clearly presented in the case. Furthermore, potential conflicts of interest involving the chemical consortium's funding of the Katz laboratory could be essentially eliminated by obtaining other funds to study DPP based on Nellie's initial findings.

Secondary relationships present in the case study involve the postdoc, the University, and the funding source(s). The case presents only the "can of worms" phrase regarding the postdoc. While the reader must recognize that no background is given regarding the reliability of the postdoc, it is stated that apparently Dr. Katz confided in him. As a director of research personnel, Dr. Katz has the responsibility to conduct himself in a professional manner. A point of discussion regarding the case could be when and if Dr. Katz should have disclosed Nellie's proposed DPP experiments with other laboratory members. Typically a postdoc has significantly more independence than a graduate student, opening the possibility that the postdoc could conduct the DPP experiments without permission from Nellie. One final issue regarding the relationship between the postdoc and both Dr. Katz and Nellie regards confidentiality. Since the nuances of the interpersonal relationships of the laboratory are unknown, it would be useful to discuss under what circumstances should the postdoc disclose the details of his conversation with Dr. Katz to Nellie.

A discussion of "Barking up the Wrong Tree? Industry Funding of Academic Research" may extend to include the duties of the University. Beyond the realm of legality, to what extent should the university monitor the relationship between Dr. Katz and various members of his laboratory group? As a graduate student, is Nellie entitled to more protection from exploitation and to ensure her proper education than other

personnel in the laboratory group? Secondly, the constant pressure within a University to maintain funding to support a laboratory leads to a host of additional concerns. These include the source of funds (industry in this case) and the pressure to publish (primarily for non-industrial funding). The current trend toward increasing collaboration between industry and academia necessitates monitoring by the University of research stipulations and intellectual property rights associated with such funds. Although negligence on the part of the University is not obvious in this case, it may be worthy of discussion to address whether graduate student training can be effectively carried out with industrial funds designated to focus exclusively on a commercially important compound.

Within the group of ethical issues in the case study broadly classified as dealing with the methodology of science, several questionable research practices may provoke discussion. The first is whether the various experiments were appropriately designed. Depending on the specific aims and methods of Nellie's dissertation proposal, a potential conflict of interest between Dr. Katz's unbiased opinion and the chemical consortium's funding stipulations may have led to an inappropriate design of Nellie's study. Dr. Katz indicates that the lab funds are to study the effects of TTT, whereas Nellie attempts to uncover the cause of declining fish populations. A proper experimental design for Nellie's dissertation may have included at least a preliminary analysis of a broad range of physical (e.g. temperature in Scenario 1), biological, and chemical factors. All of these factors could be classified as "environmental", as described in the case. Furthermore, could Dr. Katz's decision to block analysis of DPP be, under any circumstances, construed as a deceptive selection of data?

Under Scenario 2, Nellie decides not to tell Dr. Katz that she conducted experiments demonstrating that DPP exposure results in decreased enzyme levels. If this route is taken by Nellie, the possibility arises that she could pursue DPP studies following her dissertation. Here again, the timeframe to species extinction and to completion of her dissertation are important factors. While Nellie may be apprehensive about revealing the findings (Scenario 2) to Dr. Katz, permanent suppression of these findings should not occur.

The issue of industrial funding for academic research clearly is central to the case. One question is whether the chemical consortium's funding is in the form of a grant or a contract. If Dr. Katz has obtained a grant, then experimental findings uncovered during the course of the research may, and arguably must, allow for modification of the initial hypotheses. A research contract with the chemical consortium, on the other hand, may not allow for such flexibility since typically the hypotheses to be tested and the methodology will be laid out by the funding agency. Difficult issues may arise if the Katz laboratory operates under a research contract when unexpected findings, such as that involving DPP in this case, are encountered. Under a research grant and in the proper training of a graduate student, Dr. Katz would be expected to pursue such new avenues of study, at least to some degree. The guidelines of a research contract however may not allow for such a diversion from the original study.

The funding of the Katz laboratory also raises concerns regarding conflicts of interest and the conflicts of commitment. Clearly, Dr. Katz has a professional

obligation to carry out the research funded by the consortium. He also has an obligation to properly train graduate students to carry out independent scientific research. The many duties inherent in leading a university laboratory (e.g. researcher, teacher, administrator, manager, writer) make it very difficult to avoid such conflicts of commitment entirely. It would be useful to discuss under what circumstances can Dr. Katz adequately fulfill all of these professional obligations. Finally, there exists the potential for a conflict of interest arising from industrial funding of academic research. As with any discussion of conflict of interest, the existence of a conflict of interest does not necessarily mean that any wrongdoing has actually taken place. A conflict of interest, in and of itself, does not necessitate unethical behavior. Dr. Katz enjoys a large, well-funded research laboratory due to financial support mostly from the chemical consortium. The ability to acquire financial support for laboratory studies is one of the primary factors by which established scientists are evaluated. Professional versus personal gain may be difficult to distinguish. Has Dr. Katz's professional judgment regarding what to study and how to study it been affected by his source of funds? Does he value his scientific prominence at the expense of carrying out unbiased science? If Nellie carries out the DPP experiments and Dr. Katz either prohibits further study of DPP or fails to publish these findings, has the advancement of science ultimately been harmed? These and similar questions make the case of "Barking up the Wrong Tree? Industry Funding of Academic Research" a thought provoking exercise in contemporary scientific ethics.

## Possible question bank for the panel discussion for RCR symposium 2018

Topic- Public trust in research: Industry funding of research

1. Panelists to disclose their outside interests as they are related to their research (consulting, equity, start-ups etc.)
2. Briefly describe how you have worked with corporate partners or about your collaborations or other interactions with private corporate funders in your research
3. Could you tell us how collaborations with private/corporate funders have helped advance your research?
4. Do you see a difference in the types of research topics that are of interest to industry collaborators or other private funders vs those that are funded by a government agency (NIH, NSf etc.)?
5. The topic today is public trust in funded research- have you come across a situation in your research where your collaboration with industry or the results of that research was called into question? Would you be willing to share the instance and how you handled it?
6. What do you think are the top TWO issues that have led to a concern about objectivity in academic research when it is funded by entities that have interest in the results?
7. Have you seen differences between federal agency expectations for how research is conducted and their involvement compared to the expectations of corporate funders?
8. There is some criticism that while there is no obvious bias in the conduct of the research or the analysis of results, the research design for these studies may not be as unbiased or thorough as say that of a proposal that has gone through a peer-review study panel at the NIH/NSF. What are your thoughts on this? Is there anything that needs to be done about this?
9. Some are concerned that when the results of their studies support the interests of the sponsor, academics can become an extension of the marketing arm of the sponsor. What do you think and how can this be avoided?
10. Are you concerned about other reputational issues related to your corporate funding sources?
11. Regarding the case study "Barking up the wrong tree"-what is your take on the PI Katz's focus on the TTT compound and his hesitation to allow Nellie to investigate DPP? What would be an appropriate thing to do if a student brings up a possible research angle in a situation like this?
12. What about his direction to study the effect of water temperature on enzyme levels? Does that indicate anything?

13. In the case study “What’s in an agreement?” what do you think of the clause that the company will provide a limited data set for research? How would you handle this?
14. What issues do you see with the clause that researchers must get permission from the sponsor before publishing the results? Or that payment will be based on satisfactory results?
15. What should we do as an institution and as researchers to ensure that our research-related corporate collaborations are not viewed as potentially biased or unfairly favorable to the sponsors? Are there steps that you have taken in your research?
16. Are there certain types of studies that you have not agreed to do, because of concerns about sponsor control or the perception of bias in results?