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ABSTRACT: *Filing charges of scientific misconduct can be a risky and dangerous endeavor. This article presents rules of conduct to follow when considering whether to report perceived misconduct, and a set of step-by-step procedures for responsible whistleblowing that describe how to do so once the decision to report misconduct has been made. This advice is framed within the university setting, and may not apply fully in industrial settings.*

One of the most difficult situations that a researcher can encounter is to see or suspect that a colleague has violated the ethical standards of the research community. It is easy to find excuses to do nothing, but someone who has witnessed misconduct has an unmistakable obligation to act.¹

Reporting suspected research misconduct is a shared and serious responsibility of all members of the academic community. Any person who suspects a scientific misconduct has an obligation to report the allegation to the dean of the unit in which the suspected misconduct occurred or to another senior University administrator.²

How seriously should a scientist take an exhortation or a requirement to report acts of misconduct on the part of others? While one assumes that the committees drafting the ethical codes with such elements are serious, common sense and observation sometimes offer a different perspective. Even cursory attention to reports in the press shows that people who report perceived misconduct—whistleblowers—often pay a high price for their actions.

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We've all heard the story: someone reports wrongdoing in the workplace and gets fired for the effort. After years of limbo, an investigation or a lawsuit finally substantiates the original report. But the person making that report has suffered serious consequences (unemployment, reputational damage, medical or psychological problems, divorce, financial distress, etc.) and emerges from the ordeal a changed and often damaged person. Is this worth it? Should any sensible person ever blow the whistle upon suspicion of serious wrongdoing?

It depends.

In order to make an assessment, the would-be whistleblower must consider a variety of issues. Here I propose rules for responsible whistleblowing and specific steps to follow in making the decision to act. The rules are overarching concepts applying to the initial phase of investigating *whether* to report perceived misconduct. The specific steps in the procedures for responsible whistleblowing describe *how* to go about the process once you have decided it is necessary. Before the specifics, let's consider the elements that contribute to the high prices sometimes extracted from whistleblowers.

Why do Whistleblowers Pay Such a High Price?

In part, this is due to our visceral cultural dislike of tattletales. While in theory we believe that wrong-doing should be reported, our feelings about the practice are more ambivalent.

The report of the National Academy of Sciences, *Responsible Science: Ensuring the Integrity of the Research Process*, reveals the ambivalence of the scientific community:

The important role that individual scientists can play in disclosing incidents of misconduct in science should be acknowledged. Individuals who, in good conscience, report suspected misconduct in science deserve support and protection. Their efforts, as well as the efforts of those who participate in misconduct proceedings, can be invaluable in preserving the integrity of the research process. When necessary, serious and considered whistleblowing is an act of courage that should be supported by the entire research community.³

The caveats almost overwhelm the positive admonition: those who *in good conscience* disclose only when the act is serious and considered are playing an important role and *should be* supported. Perhaps some of this ambivalence is rooted in fear of becoming oneself the target of maliciously motivated false charges filed by a disgruntled student or former colleague. While this concern is probably overblown, it seems not far from the surface in many discussions of scientific integrity.

Consider also how these cases often look from the other side of the desk. In organizations across the country, there are people whose job it is to receive grievances, allegations and petitions. A very large percentage of the problems presented to them

turn out to have a basis quite different than that proposed by the initiator of the process. Put another way, every story has at least two sides, and a problem often looks quite different when both are in hand than when only one perception is in view. The knowledge that many charges are misplaced or result from misunderstandings reinforces ingrained hesitations against encouraging charges without careful consideration.

On the other hand, serious problems do occur where the right and best thing for all is thorough examination of the problem. In most instances, this examination cannot occur without someone calling the problem to attention. Early, thorough review of potential problems is in the interest of every research organization, and conduct that leads to it should be encouraged. Thus the dilemma. The whistleblower worries about doing the right thing and surviving the process. The university doesn't want to encourage frivolous charges, but it must be open to bad news so that serious problems can be addressed and rectified at the earliest possible opportunity. This is where attention to the rules of responsible whistleblowing benefit all parties.

"Good Faith" Whistleblowing

A key issue in these cases is usually the motivation of the whistleblower. Good faith whistleblowers (or, in the words of the National Academy report, those who report in good conscience) must be protected—even when wrong about the ultimate facts. Bad faith or malicious whistleblowers who are mistaken can be charged with misconduct themselves. How to tell them apart?

In general, we probably put disproportionate emphasis on this issue. After all, if the facts reported are true, the motive of the whistleblower should not matter. Even where the whistleblower delights in the problems of the wrongdoer, if the objective evidence reveals that important professional standards were violated, the motives of the person raising the question should be irrelevant. Our general ambivalence about tattletales probably explains why motive is seldom considered irrelevant. This reinforces the central dilemma for the potential whistleblower: if the question of good faith is entirely subjective, how can you know whether to report or to practice self-protection by avoidance? Both the prospective whistleblower and the research institution need to know how good faith—or at least its constituent elements—will be established.

It is important to note that the existence of animosity between parties is not in itself a basis for establishing bad faith. But its existence will affect how events proceed. Those who are experienced at receiving concerns about possible misconduct know that a very large number of cases involve personality conflicts or disputes between two or more parties. Institutional officials who receive charges will thus almost always probe (consciously or unconsciously) for evidence of personal animosity in the initial stages. It is a reality that once working relationships become attenuated or strained, trust erodes. Conduct that might have been accepted or

explained away when the parties were on good terms with each other is perceived through a darker lens. The person probing for information on problems between the principals is not doing so to explain away or excuse fraudulent behavior, but to gain a fuller understanding of what might be going on in the situation—seeking to understand both sides of the story. A key question is whether anything about the work has changed (or has crossed the lines of acceptable professional conduct) or whether instead it is simply the good will between the principals that has deteriorated. Because it is also quite frequently the case that another explanation may account for the conduct in question, the person receiving the allegations will be searching for information along those dimensions as well. For example, the conduct may not constitute scientific misconduct, but may well be inappropriate on other planes (abuse of power, bullying or intimidation of subordinates, etc.).

Filing mistaken charges where there was good reason to know the charges were false is the key element of most definitions of “bad faith”. In this context, lawyers sometimes ask whether the accuser “knew or should have known” that the charges were false. That is, if the person bringing the charges should have known that the charges were false from other information readily available, that could be one indication of possible bad faith.

The following rules for responsible whistleblowing are proposed as a way to assess good faith. Inherent in this proposal is the belief that adherence to professional standards of conduct is evidence of good faith behavior. The proposed rules take into account both our reflexive responses to bearers of bad news and the reality of interpersonal relationships in working groups.

Thus, the rules for responsible whistleblowing take up at Rule One with the mandate to examine carefully internal biases and motivations. Rule Two builds on that principle by suggesting that concerns be cast always as questions, not allegations. Such a presentation demonstrates good-faith by demonstrating a willingness to take into account unknown aspects of the situation. Similarly, the rules are constructed to help assure that the focus remains upon scientific issues and that steps are taken to avoid the grossest misunderstandings that may lead to the filing of mistaken charges. All of this is designed to reinforce the whistleblower’s good faith and avoid conduct that could lead to a charge of bad faith.

Finally, the rules take account of the fact that another source of damage to whistleblowers stems from conflicts of interest occurring inside the organizations in which they raise their claims.

The overarching rules that follow apply throughout the whistleblowing process, but especially in coming to a decision about whether to blow the whistle.

RULES FOR RESPONSIBLE WHISTLEBLOWING

Whether you ultimately file charges or not, you should adhere to the rules for responsible whistleblowing while assessing the situation. You must make your conduct as professionally correct as possible. That process starts long before you seek someone out to report your concerns officially and covers both your conduct and your thinking about the situation in which you find yourself.

Rule One: Consider Alternative Explanations (Especially That You May Be Wrong)

All the following rules are based upon full compliance with Rule One. At every juncture, consider seriously the fact that your perception of the situation may be mistaken. Remain open to information that provides an alternative explanation to your own. When receiving information that contradicts your own conclusions, go back and re-examine your logic to see if it still holds up. Rule One does not mandate that you ignore clear conclusions from obvious facts; it simply requires you to make a serious and considered effort to assure that your conclusions are sound and will withstand close scrutiny. It is far better for you to perform these checks than for others to expose major flaws in your thinking that you yourself could have discovered had you applied a stringent enough standard.

There may be information you do not have or cannot get; you are not expected to be omniscient, but you are required to be careful and judicious in forming your opinions. No matter how firm your conclusions, it is also extremely important to follow Rule Two in formulating your concerns. If you can get in the habit of doing so even in your interior dialogues, you won’t run the risk later of slipping into presentations of conclusions rather than expressions of concern.

Rule Two: In Light of Rule One, Ask Questions, Do Not Make Charges

The word “questions” is critical. Before charging anyone with anything, it is good practice to pose your concerns as questions, particularly allowing for the fact that you might have misunderstood or misinterpreted the situation. This is especially true for graduate students, who do not always have all the information necessary for evaluating a situation. For example, very often students have concerns about the allocation of credit for work. Because of the concentrated and intense nature of their own work, sometimes students are not fully aware of contributions being made by others in the laboratory, including the lab chief. Thus, a student who feels that he or she has done “all” of the work on a project and questions why another person is also sharing authorship credit, might not be aware of the lab chief’s pre-existing body of work on the problem or even that others in the lab group are working on the same or a closely related problem.

Your questions should proceed on the implicit premise there is something you do not understand and thus that you are seeking help to improve your own comprehension: "I was taught that all those who contributed significantly to an experiment and development of a manuscript should be authors. Can you review my contributions and help me understand why my level of effort does not qualify me for authorship?" or "Am I misinterpreting these results? No matter how often I recalculate, I'm having trouble getting the result shown on this table in the published manuscript. Can you help me see where I'm going wrong?"

It is very important to listen and not just to talk. Whenever you ask these questions, you should be engaging in a two-way conversation. See also Steps One and Two in the Procedures for Responsible Whistleblowing, below.

Rule Three: Figure Out What Documentation Supports Your Concerns and Where it Is

Playing "he said, she said" is not fun. The more you can keep the focus on factual matters, the better off you will be. All too often, the personality of the whistleblower becomes the focus in these situations, instead of the issues. You can help prevent this by concentrating relentlessly on the facts and what it takes to assess them, as well as by presenting yourself as professionally and unemotionally as possible. If you know what the questions are and where the answers are (even if you do not have access to the source of the answers), you can pose questions more directly, and you will make it harder for your questions to be shrugged off without examination.

Information you might assemble includes answers to some or all of the following questions: What data or procedures are at issue? Why is this the case? Where are the data to be found? How are they kept? (Paper, computer file, notebooks, samples, instrument output, etc.) Who collected them? Using what techniques? What materials were used in the experiment? Where did they come from? Has the work been repeated? Has the work been published or submitted for publication? Where? What did the reviewers' comments say? What word processor was the manuscript produced on? Who has access to it? Who else knows anything about these issues? How can that person or persons be reached?

Rule Four: Separate Your Personal and Professional Concerns

Separate your personal and professional concerns to the maximum extent possible so that you will be presenting yourself only in a professional light. If you are overwhelmed by anger, frustration, resentment, or anxiety, consider seeking professional help, or find other outlets for it. Do not ask or expect those to whom you are taking your questions about professional conduct to function as your friend or therapist. You will need friends and you may need a therapist as you go through this process. Just don't confuse those needs with the professional interactions you will be

initiating when you raise questions about the work of another. Keep your focus in those transactions on the work at issue.

Rule Five: Assess Your Goals

What are you seeking from this situation? What would it take to make you feel that it has been properly resolved? How will you know when you have achieved it? Know the answers to these questions before going any further, because they will affect your next actions.

Are you trying to get the record fixed? Get the work redone? Catalyze a public or private discussion of the issues? Get someone else to admit error and that you are right? Get money for supporting your own theory? Protect yourself from association with misconduct?

Long before you start asking for advice, "going public" or lodging formal charges, it is critical to know what you personally seek from the situation and how you will know when you get it. These situations can escalate very quickly. Lodging charges, in particular, almost always results in a loss of control: analyzing your own motives and goals can be very helpful in choosing the path to follow.

For example, Step One below may well lead to the person you consulted becoming concerned on his or her own. If control and personal involvement (as in receiving an apology or public vindication for your contribution) are important enough to you that you will be dissatisfied without personal involvement in a correction to the record, you need to know that and to articulate it in your interactions.

If you do not know what you seek before you get into this process, you may well find yourself unhappy with the outcome, no matter what it is. In addition, if you do file charges, you will almost certainly be asked what recourse you seek. Having a coherent and reasoned answer to this question will have a constructive effect on the process and will reinforce the other steps you have taken to make this a matter of professional conduct, not one of emotional reaction.

Rule Six: Seek Advice and Listen to It

If you have complied to the best of your ability with all these rules and still believe there is a problem, you are ready to begin on the step-by-step process of responsible whistle blowing. Note that there are still steps to go through before filing charges. You can only go so far by yourself, so this is the place that the rules for responsible whistleblowing segue into the steps for exploring your concerns with someone else.

Steps One and Two provide information on picking the right person and the overriding importance of listening to the advice you receive. No matter how honest you have been with yourself nor how critically you have examined your logic, someone else may have information or perspective that you are missing. Keep your mind open to the possibilities. Remember Rule One.

Bear in mind that there is risk in seeking advice, but if you follow the rules and pay attention to the steps, you should be in a relatively protected position until the point at which you actually report your concerns officially. Note the caveats in these statements: as soon as you tell anyone else what worries you, you run the risk of losing control of the situation. Thus, proceed cautiously. Remember also that the goal of the early steps is to collect enough information to decide whether you will be justified in making an official report of your concerns: at this point, you do not have enough information to know whether you should be filing such a report. You are behaving professionally and responsibly to determine the appropriate future course.

STEP-BY STEP PROCEDURES FOR RESPONSIBLE WHISTLEBLOWING

Step One: Review Your Concerns with Someone You Trust

The first step is always to talk quietly and confidentially with someone you trust who is in a position to evaluate your concerns. If possible, choose a person of equal or greater power than the person about whose conduct you have questions. Two ends are served by this: First, you get reasonable advice from a person with a perspective that may provide insights you do not have alone. Second, choosing a person of equal or greater power than the person whose conduct concerns you can provide the foundation for a future alliance, if the issue is not resolved through these early steps. Follow Rules One and Two very carefully: ask questions (only), do not lodge charges. Explain what concerns you and ask for help understanding the situation.

Note the emphasis on seeking confidential advice. Before you get into the substance of your concerns with someone from whom you seek advice, ask the person if he or she is in a situation to protect your confidences. Some people, because of their institutional positions of responsibility or their personal situations, may not be able to promise confidentiality at this point in the process. For example, if a person with compliance responsibilities learns, even inadvertently, that there may be violations with respect to subjects of research (human or animal), that person may not be able to avoid checking into the situation, no matter how it might affect the person who raised the issue. Similarly, if you by mischance choose someone with a close personal relationship with the subject of your concerns, the outcome could be unfavorable. If a complete pledge of confidentiality is not possible—and many times, it might not be—then you should seek a pledge that you will be notified before any revelations are made, and that the person will work with you to protect you to the greatest possible extent.

Step Two: Listen To What That Person Tells You

If the person you select for advice disagrees with your perspective or discourages you from proceeding further with your questions, try with all your might to evaluate that response objectively. Do not assume that person is trying to protect someone else or is a coward if he or she does not agree with you. Those assessments may be correct, but it may also be that you are mistaken or do not fully understand the situation, or that you misinterpreted some aspect of it. Consider carefully the possibility that you are just plain wrong in your suspicions.

If the person you selected for advice disagrees with you, is the disagreement based on the facts you provided, or does it seem to be based on personalities or the way you conducted yourself in the conversation? That is, does the response have the tone “Based on my experience with x, y and z, that seems unlikely to me for the following reasons...” or is it more like “I know Dr. Jones and she would never do that”?

Reassess your conclusions if the objections are fact-based and you cannot rebut them with other facts.

If the person agrees with you that there is or may be a problem, talk about what steps can be taken and who will take them. The person may want or be willing to carry the charges him- or herself. This is one situation in which it can be invaluable if the status of the person you have consulted is of equal or greater power than the person whose conduct is questioned. If that person is convinced there is a problem and that it requires additional steps, you will gain protection from his or her participation in them.

If you're still uncertain about what to do, apply the third step, but with care.

Step Three: Get a Second Opinion and Take That Seriously, Too

Bear in mind before taking this step that most communities are relatively small and that word does travel within them. Your actions thus may well arouse the rumor mill or grapevine, which can be damaging in some settings. Your demeanor in the process thus becomes all that more crucial. Be careful to ask those you consult for confidential, personal advice and to watch your presentation of yourself and your motives.

As difficult as it may be, focus on facts at all times, not your feelings about the person whose conduct concerns you. Those feelings may need to be addressed, but they do not affect the scientific issues at the root of your concerns.

Again, note that you are posing questions, not lodging allegations. Also, as you continue to explore the situation and your options in it, you should be refining the elements of the information you present to make as coherent and logical a presentation as possible. This will include how your concerns first arose, what you did to assess them and/or to seek out alternative explanations, whom you have consulted to date, the advice you received and what you did in response to that advice. It should also include some indication of what data are relevant to your concerns and where they can be found.

Your presentation may have the following flavor: “I first became concerned when I noticed that the figures in the paper didn’t match data I had collected. When I asked Dr. Smith about this, I was told that these data came from one of our collaborators who used a more precise instrument than we have available. The thing that worries me is that I used such an instrument in my previous lab, and its output doesn’t resemble what is presented here. When I asked about this, I was told it wasn’t my concern. I consulted Dr. Deliberate, an expert on this instrument. She confirmed that no version of the instrument could produce data in this form. I am very confused and am trying to figure out an appropriate way to proceed. Can you help me figure out what I should be doing next? I am concerned about asking more questions in my lab, because I’ve been told explicitly not to do that. On the other hand, I’m worried that a miscommunication may be leading to problems, or just my own confusion. The data I collected are in my notebook on the third shelf from the left in Room 697. I’ve brought copies for you to see. This is the version of the manuscript that first led to my concerns, and some literature Dr. Deliberate gave me describing the features of the instrument I was told produced the data in figures 4 and 7. What is your advice?”

Again, assess the response you receive very carefully. Does any aspect of it change your perception of the situation? Can you rebut that information with other facts (not just your conviction that Dr. Smith is a slippery character who is not to be trusted?) Go back and apply all the Rules and reassess where you stand. If you believe that going forward is the right thing to do, work through Step Four carefully and thoroughly.

Step Four: If You Decide to Initiate Formal Proceedings, Seek Strength In Numbers

See if those you consulted will join you in filing a statement of concern with the appropriate authorities. Are there others in your environment who are experiencing the same problem or who may have observed the same actions that cause you concern? See if they will combine with you in making a report of your concerns or of asking that someone look into the questions you raise. Do so carefully: do not charge in like a bull in a china shop. Every additional person with whom you speak forthrightly increases the possibility that you will catalyze the department’s rumor-mill. This increases the chance that the word will get back to the person whose conduct concerns you in (usually) the most damaging possible way for you. Thus, take special care to stick to the advice in the Rules and continue to ask questions in a way that holds open the possibility that you are mistaken.

In the same vein, if none of those you’ve consulted or asked are willing to involve themselves, try to assess their reasons carefully. Do they disagree with you? Do they agree but think the matter is not important enough to pursue or that another approach would be more constructive? Or are they fearful about the consequences of proceeding? Some of these are more important considerations than others for you to factor into your ultimate decision.

Figure out if there is an ombuds person or victim advocate in the system you are invoking. Seriously consider using that person’s services.

Try some or all of these approaches. This can be a lonely business and having support may mean the difference between surviving the process with a career intact and not. If all you get from the effort is moral support, that too will be an asset. If, from these efforts, you form a group of people who together present charges, even better. Either way, any steps you can take to reduce or prevent your isolation will be to your benefit.

Step Five: Find the Right Place to File Charges; Study the Procedures

Before taking the step to file officially, make sure the person or organization you intend to ask to review your concerns has some legitimate connection to the work you question. For example, journal editors are frequently asked to investigate claims made in papers submitted to them, but usually lack the resources to do much direct investigation, being dependent instead upon the home institutions of the researchers. Ascertain whether the person whose conduct concerns you is an employee of the organization to which you will be reporting. Does that organization have responsibility over the person because the research was conducted under its auspices or on its premises? You may be setting yourself up for disappointment if you seek recourse from a body that has no authority to look into the questions you raise.

If possible, have some leverage or know how to get it. That is, know what the oversight process (if any) is for the process you are invoking. Sometimes, it may be necessary to alert that oversight system when you formally invoke an institution’s procedures so you can assure that your charges do not get lost in the system.

Know before you take your first formal steps what procedures will be followed. Institutions receiving federal research funds are required to have written policies. Get a copy of the relevant policies and read them. Look for information on the following topics:

- Are you required to submit your charges in writing, or it can be done orally?
- Who will be informed of the charges you make?
- What role will you have in the process?
- What safeguards will be applied to protect against conflicts of interest among those reviewing the matters you are raising?
- Who will be informed of the outcome of the process? How will that occur?

The answers to these questions will not necessarily change your next step, but they will prepare you for the process and minimize any unpleasant surprises.

If, after exploring these issues thoroughly, you conclude that your concerns are well founded and the matter serious enough, then—and only then—proceed to Step Six.

Step Six: Report Your Concerns

To the maximum extent possible, continue to pose your concerns neutrally or in the form of questions. Remember that you still are not asserting that “Dr. Mustard is committing scientific fraud”. You are stating facts, asking questions or raising concerns along with specific information about how those concerns may be assessed. The tone will be something like: “The published data from three experiments conducted between June and December 1997 appear to differ from those in the laboratory books kept in the blue cupboard on the east wall of room 2546,” or, “The first two sections of the paper published by Dr. Scarlet seem to track very closely my dissertation. I am not listed as an author on the paper.”

There may be facts of which you are unaware that make the situation dramatically different from your current perception of it, no matter how careful you have been in following the rules and procedures for responsible whistleblowing. Your interests will be better served in the long run if you can avoid attaching labels, attributing motives, or displaying venom in your interactions.

When you make your report, provide all the documentation you can, or all the information about its location you have available to you.

Step Seven: Ask Questions; Keep Notes

If there is a meeting at which you report your concerns, ask questions and keep careful notes of the answers you are given. Date your notes, and record who was present when you were provided with each item of information. Ask what steps will follow and to what extent you will be kept informed. Ask if there is a person whom you may call or who will contact you regularly to keep you apprised of the status of the situation. Will you be called to testify in the process? Given an opportunity to respond to information presented about your concerns? Informed when the process is over?

If called to testify before an investigating committee, find out if you may be accompanied by a friend or adviser, for moral support if nothing else. These occasions can be stressful, and many people under stress do not hear or remember things as well as they might wish. If you are accompanied by a trusted person, that person can call for a break to help you regain your composure if you get wrapped up in the emotions of the moment, and after the meeting can help you form a balanced perspective about the meeting. Under ordinary circumstances you should not need to engage an attorney, and if you do, it may send signals that are counterproductive. However, it is wise to have someone accompany you who puts your interests first and can help you assess how the process is functioning.

(Please note that there are circumstances that are not ordinary and in which consulting with an attorney in advance may help protect you. If there is not someone you can consult confidentially inside the university, or if the conduct that concerns you is very serious if true, you may want some legal advice before you begin. If the

university or organization has received publicity for treating previous whistleblowers very badly, or for responding to problems with all-out attempts to whitewash, you may want to arm yourself with good legal advice in advance. It still may not be a good idea to be accompanied by an attorney when you file your charges, but having an effective lawyer on your side and/or knowing your legal position in advance of taking action is sometimes a wise precaution. Note that unless the attorney is experienced or knowledgeable in this special area, the advice may not be of much use to you. Do some networking to find the right lawyer. Contact one of the whistleblower support organizations or a successful whistleblower for advice and/or a referral.)

Take all of your documentation and notes when you go to file charges—and be prepared to provide copies if you have not previously. Again, try to project a calm, nonindictive demeanor; focus on “big-picture” objectives and avoid slurs on the character of others. Your feelings should not be the focus of these proceedings—the factual matters in question should be.

Keep your advisors and/or advocates informed. Listen to their advice and try to keep a sense of humor and perspective. Get a lot of exercise and find ways to work off the frustrations that will inevitably arise in the process that will follow.

Step Eight: Cultivate Patience!

This process always takes longer than will feel reasonable. If there is a formal inquiry or investigation, it is likely to be conducted by committees. The logistical problems of getting together busy committee members can impede rapid progress, even before any other complexities arise.

For this and other reasons, it is important not to make assumptions about what is happening or what it might mean. Ask the person to whom you reported your concerns to call you periodically, or call and ask yourself. Be patient and persistent. Keep following the Rules in how you conduct yourself.

CONCLUSION

It is possible to blow the whistle and still have a career afterwards, but it takes a combination of common sense, prudence, and some luck. If you have followed these rules and steps carefully, you have done a great deal to protect yourself as you move through an investigation of scientific misconduct. There are no guarantees, but following these steps should leave you reasonably well informed and help you to make good decisions.

These proceedings are difficult for everyone involved, but by following these rules, you should be able to maximize the likelihood that questions that concern you are serious questions deserving of concentrated review. In the process, by looking before leaping, you will minimize some of the worst consequences for whistleblowers.

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3. *Responsible Science: Ensuring the Integrity of the Research Process, Volume I*, National Academy of Sciences (National Academy Press, 1992), recommendation 11, pp. 16-17.