Collaborative Science and Authorship

Introduction

Collaborations are an important component of biomedical research at the NIH and worldwide. They serve to bring together investigators with diverse expertise for the purpose of addressing specific, important research goals and studies. Successful multidisciplinary teams are characterized by a strong sense of direction and purpose, clearly defined roles and responsibilities, joint commitments of time and effort, effective lines of communications, and a framework for evaluation of progress.

A critical dimension of successful collaborative science related to clear roles and responsibilities concerns planning for future publication(s) with the fair and appropriate allocation of credit through authorship. Written authorship agreements that reflect the substantive contributions of all the research staff and laboratories involved in the project, including students, technicians, fellows, and investigators (including in core facilities and with extramural partners), are especially important in the context of multi-team research. Where appropriate, co-first authorship designation provides a mechanism for ongoing career advancement of young research faculty, while co-senior and corresponding author designations allocate credit for project conceptualization, coordination and successful execution by the senior researchers. Flexibility amongst the study teams and co-authors may be required to maintain fairness under certain circumstances, such as extensive additional experiments being incorporated, departures of staff and completion of experiments by new fellows, or journal requests for additional data. Mechanisms for resolving authorship disputes include local mediation (e.g., by respective lab or branch chiefs), involvement of program or scientific director(s), or engagement of the NIH Office of the Ombudsman.

==========

Case # 1 – Intellectual Input, Core Facilities and Authorship

(adapted from Scientific Integrity by Francis L. Macrina; developed by the NIH Committee on Scientific Conduct and Ethics)

PART 1

You have a radical idea regarding how to perform genomic editing much more efficiently than was previously possible. You tell your colleague Anastasia about it and how you plan to test the hypothesis. Anastasia does not work in your field, but you spend some time explaining to her the details of your study and she offers a number of unsolicited suggestions on how to make a compelling case for the novelty of your method. After this initial conversation, Anastasia talks to you frequently about the project and comes to several of your lab presentations. She comments critically on your work and makes other suggestions, including the idea that you try different cell types to further build your case. These experiments strongly support your initial hypothesis and show that the technique can be generalized. You decide to submit your exciting results to a prestigious journal and ask Anastasia to comment on it before sending it to the journal. Anastasia returns it with some insightful comments and argues strongly she should be a coauthor on the manuscript.

Discussion Questions

1. Should you agree to include Anastasia as a co-author and what is the rationale underlying your response?

2. What is the relative importance of thinking of and planning experiments compared to being able to effectively execute them? How should these two aspects of research be reflected in authorship and authorship positions?

3. Was there a time when it would have been helpful to discuss Anastasia's role in the project?

PART 2

Based on your prior high profile publications, you are hired into a tenure-track position at the prestigious National Institutes of Health. Part of the attraction of the position is a laboratory doing state-of-the-art sequencing. You approach the head of the sequencing group, Dr. Max, to explore using the genomic sequencer for your own research. Although Dr Max is happy to collaborate with you, he spells out conditions that include that only Dr. Max's technician may operate the instrument, and that all the original data must remain with Dr. Max. In addition, any paper submitted for publication that contains data obtained using the instrument must be reviewed by Dr. Max prior to submission, and he must be included as a co-author, with his two technicians acknowledged for their expertise.

Discussion Questions

1. Are the conditions requested by Dr. Max reasonable? What if his equipment was purchased for the whole Institute and his lab was considered a core facility? What do you think of the request that Dr. Max keep all original data? What about the requirement that he be an author on the resulting publications?

2. What do you think is an appropriate way to handle the contribution of the technicians who actually operated the sequencer? What about a technician in your lab who performed several of the experiments?

PART 3

Dr. Wong has developed a novel approach for analysis of genomic sequence data that is available on open source websites but is cumbersome to implement. After meeting Dr. Wong at a lab seminar, you mention that you plan to implement the method but you haven't been able to hire someone with the right computational experience. After the discussion, you share your data with him and about a week later you receive a series of summary figures, as well as an interpretation of the data and some ideas about additional genes to analyze and experiments to perform.

Approximately 9 months later, you receive an angry email forwarded from your lab chief where Dr. Wong expresses outrage that you have published a paper using not just the analytic method but also validating some of the genes that he had proposed. Dr. Wong expressed the opinion that based on his analysis and reporting the data back to you, as well as the fact that interpretation of the results at the level of predicting specific genes and pathways, required experience and insight and that was sufficient to have warranted co-authorship.

Discussion Questions

1. Was Dr. Wong justified in being upset? Are there corrective actions that you should take?

2. What actions could you have taken to clarify collaborative and authorship roles, and when might you have taken those steps? What were your expectations when you shared your data with him originally?

==========

Case # 2 – Authorship Disputes in Multi-Team Collaborations

Dr. Wallace, a neurotoxicologist, and Dr. Anderson, a pathologist, have been collaborating on a research project investigating the effects of an organophosphate pesticide (OP1) on central nervous system neurons in rodents. Dr. Wallace's lab includes a visiting scientist, Dr. Wang, while Dr. Anderson's lab includes a senior postdoctoral fellow, Dr. Adams. Their experiments randomly assign the rodents to be fed a normal control diet or diets containing three different OP1 concentrations. The primary outcome measures are neurological function, neurotoxicity, and OP1 uptake by neurons. Dr. Wang had discussed the idea for the project with Dr. Wallace prior to his arrival and initiation of the collaboration, at the time suggesting they test a different pesticide of the same chemical class (OP2). In the discussions leading up to the collaboration, Dr. Adams recommended testing OP1 instead of OP2, because there were very few experiments using OP1 in the literature. As the experiments were to begin, Drs. Wallace and Anderson agreed over the phone that Drs. Wang and Adams would be co-first authors on the resulting manuscript (in that order), indicated by an asterisk and footnote stating that "Drs. Wang and Adams contributed equally to this research." Similarly, Wallace and Anderson would be listed as co-senior authors, with Wallace listed last. Dr. Adams would prepare a first draft of the paper and be listed as the corresponding author. Drs. Wallace and Anderson did not have a formal collaboration agreement, however.

The two teams completed their research and submitted the manuscript to a top-tier toxicology journal. The reviewers recommended acceptance of the paper with major revisions to incorporate data from additional tissue pathology analyses that Dr. Anderson's lab would have to complete. She agrees to this, but requests that Dr. Adams be listed as the first author, followed by Dr. Wang. The paper would still indicate they contributed equally to the research so they could still claim first author status on their CVs. Anderson also proposes that she be listed last as the sole senior author because her role and level of effort has expanded based on the journal review. Dr. Wang is very upset about this proposed change because it may impact his chances for tenure, since his university requires being first author on at least two publications in top-tier English language journals as a condition for receiving tenure. Dr. Wallace is also opposed to not being listed as co-senior author, since he needs senior author papers in top-tier journals for the lab's next site visit. He sends an email to Dr. Anderson protesting her proposed change in authorship order and designations. He reminds her that this change would be going against their prior agreement. Dr. Anderson replies that the prior agreement no longer applied because of the additional pathology required by the journal.

Discussion Questions

1. Was Dr. Wallace's reaction to the proposed change in authorship and designation appropriate? How should author order and designation be determined in this case?

2. What are the pros and cons of using co-first and co-senior author designations?

3. Would the disagreement have occurred if the authorship details had been in writing from the outset?

4. Should the authors consider publishing another paper based on the new pathology data, with different first and last authors, as a way to accommodate both teams? What potential impact might this have on the review outcome with the current journal?

==========

Case # 3 – Clinical Collaborations

A physician scientist and a molecular biologist are collaborating on a series of studies that involve cancer clinical trial subjects and biospecimens from those participants. The goal is to correlate genetic profiles with patient outcomes in response to the same protocol therapy. The clinician enrolls the subjects and his team obtains the samples which are processed in the molecular biologist's lab; i.e., germline and tumor DNA is prepared and preserved, and cancer cell lines are grown from the primary tumor. Both DNA and cell lines are kept in a facility readily accessible to both collaborators. The molecular biologist believes that there are important correlational genomic findings, apart from the clinical data, that merit separate publication. He prepares a manuscript that will need to have the clinical data added, but the clinician refuses to provide them, saying the report is premature. In the dispute that follows, the physician scientist asserts ownership of the DNA and cell lines from patient samples. The dispute is brought to you as the department head to mediate.

Discussion Questions

1. What are the data ownership issues for this collaboration? Who owns the clinical data? Who owns the DNA and cancer cells lines?

2. Who should have access to, and use of, the clinical data and the materials prepared from patient samples?

3. What could a publication agreement made at the beginning of the collaboration have included?