

	<p>3) That an Investigation Committee be empaneled [REDACTED]</p> <p>[REDACTED]</p> <p>4) [REDACTED]</p> <p>[REDACTED]</p>
Name of Respondents	<p>Respondent 1: Wei Zhang (at the time of the alleged research misconduct, Respondent 1 was a Professor and Chair in the Department of Chemistry [REDACTED])</p> <p>Respondent 2: PII [REDACTED]</p>
Name of Complainant	<i>Redacted</i>
Funding Associated with Allegations	National Science Foundation (Grant DMR-1420736)

II. Executive Summary and Recommendation

This Investigation Committee was formed pursuant to the University of Colorado’s *Administrative Policy Statement on Misconduct in Research, Scholarship, and Creative Activities*¹ and the University of Colorado at Boulder’s *Guidelines and Procedures for Responding to Allegations of Research Misconduct (Guidelines)*.² The Investigation Committee was charged with investigating the above-listed allegations and determining whether the Respondents engaged in research misconduct, as defined in the above APS and Guidelines.

¹ <https://www.cu.edu/sites/default/files/1007.pdf>

² <https://www.colorado.edu/researchinnovation/compliance/responsible-research/research-misconduct/research-misconduct-procedures-guidelines>

The Investigation Committee was charged with answering three questions: [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

In this case, the Investigation Committee has determined, by a preponderance of the evidence, that:

- [REDACTED]
- [REDACTED]
- Respondent 1 engaged in Serious Research Error by poorly mentoring and not validating the results and procedures [REDACTED] and failing to provide a description of reproducible methods and uncertainties in the publication (by a vote of 2-1).

Regarding the three questions the Investigation Committee was charged with answering, the Committee determined:

- For Question 1: [REDACTED]
- For Question 2, the Committee concluded that [REDACTED] Respondent 1's poor mentorship and lack of oversight regarding [REDACTED] and lack of adequate documentation [REDACTED] constituted Serious Research Error (by a vote of 2-1).

- For Question 3, the Committee determined that [REDACTED]
[REDACTED]
[REDACTED] Respondent 1 was not determined to have fabricated or falsified any data [REDACTED]
[REDACTED] (by a vote of 3-0). Nevertheless, Respondent 1 made insufficient efforts to report the methods used and potential limitations, which could have prevented the misconduct.

See [Section III](#) of this Report for a full discussion of the basis for these findings.

Based upon the foregoing findings, the Investigation Committee recommends that the Standing Committee on Research Misconduct (SCRM) accept the report as complete.

III. Committee Deliberations and Factual Findings

Investigation Committee Members

The Investigation Committee was comprised of three members with prior experience and expertise in the fields of chemical engineering, materials science and engineering, and pharmacology [REDACTED]
[REDACTED]. Per VII(B) of the SCRM Guidelines and Procedures, all members of the Investigation Committee declared no conflicts of interest with the Respondents. All Respondents were provided the opportunity to indicate any concerns about the constitution of the Investigation Committee; no Respondent indicated any concerns.

Name	Rank	Degree	Affiliation	Expert	Conflict?
Hendrik Heinz (Chair)	Professor	Ph.D.	University of Colorado Boulder, Department of Chemical and Biological Engineering, Materials Science and Engineering Program	Yes	No
Ryan Hayward	Professor	Ph.D.	University of Colorado Boulder, Department of Chemical and Biological Engineering, Materials Science and Engineering Program	Yes	No

Mair Churchill	Professor	Ph.D.	University of Colorado Anschutz, School of Medicine, Department of Pharmacology, Microbiology Program	Yes	No
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The Chair of the Committee, Professor Hendrik Heinz, is a professor in the Department of Chemical and Biological Engineering. His research focuses on computer simulation of inorganic-(bio)organic interfaces and biomineralization and the design of catalysts and functional materials. Professor Ryan Hayward is a professor in the Department of Chemical and Biological Engineering. His research focuses on mechanics of soft active materials and the assembly of polymer and particle-based nanostructures. Professor Mair Churchill is a Professor in the Department of Pharmacology at the University of Colorado School of Medicine. Her research focuses on the molecular basis of essential processes that regulate gene expression. All three members of the Investigation Committee have published extensively in their fields and are familiar with the methods described in the paper in question.

Appendices with Evidence, Meeting Summaries, and Case Chronology

Appendix 1: Summary of Relevant Evidence (SRE) and attached Documents

Appendix 2: Investigation Committee Meetings

Appendix 3: [REDACTED]

Appendix 4: Chronology of Events

Case Intake and Investigation Committee Activity

The Investigation Committee first met and received its charge from the Research Integrity Officer and SCRM Chair on June 28, 2023. The Committee formulated a plan of action and met on two subsequent occasions to review the evidence and deliberate the case. The Investigation Committee provided Respondents 1 and 2, the Summary of Relevant Evidence for the Investigation on October 6, 2023, and provided both the opportunity to submit comments by November 4, 2023.

Allegations

The initial Complaint alleged that [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

Case Analysis and Findings

Background

The initial Complaint was submitted by the Complainant to the ORI on December 13, 2022. [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

[REDACTED]

Investigation Process

[REDACTED]

[REDACTED]. The Investigation Committee first met on June 28, 2023. The Investigation Committee reviewed its Charge and the details of the case. At the conclusion of the meeting, the Investigation Committee agreed to review the case documents gathered during the Inquiry phase. During its second meeting, on July 21, 2023, the Investigation Committee met with the Inquiry Committee Chair to review what had been learned during the Inquiry phase of the case, focusing on the work of Expert 1 and Witness 1. The Investigation Committee met for a third time on August 15, 2023, to interview Witness 1, and then again on August 22, 2023, to review what was learned from Witness 1’s interview.

After meeting with the Chair of the Inquiry Committee, then Witness 1, the Investigation Committee reviewed the existing case materials and additional data and graphs provided by Witness 1 before preparing to interview [REDACTED]. On August 28, the Investigation Committee

[REDACTED]

[REDACTED] On September 27, the Investigation Committee met with and interviewed Respondent 1. On October 6, 2023, the Investigation Committee submitted its Summary of Relevant Evidence to Respondents 1 and 2 via email, notifying the Respondents that they had 30 days to review the document and identify any inaccuracies or omissions in the SRE, and to identify any additional questions for witnesses or other relevant evidence that they feel should be explored by

the Investigation Committee. At the conclusion of 30 days, neither Respondent had submitted any comments or requests for additional questions for witnesses or other relevant evidence to be considered.

In addition to interviewing both Respondents, and Witness 1 and discussing the case with the Inquiry Committee Chair, the Investigation Committee reviewed the following additional documents and evidence during their Investigation (please see Appendix 1.4 below): [REDACTED]

[REDACTED]

Statement of Determinations

[REDACTED]

By a preponderance of evidence, it is the determination of this Investigation Committee that Respondent 1 [REDACTED] did not engage in Research Misconduct [REDACTED]

[REDACTED] The Investigation Committee was unanimous (3-0) in deciding [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] As a result, the Investigation Committee determined by a vote of 3-0 that Respondent 1 did not engage in research misconduct regarding Question 1, [REDACTED]

[REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

Regarding Question 2, the Committee determined [REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

Regarding the second part of Question 2, [REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] The Investigation Committee concluded by a vote of 2-1 that Respondent 1's actions and lack of mentoring and oversight regarding [REDACTED] constitute Serious Research Error but did not rise to the level of Research Misconduct. According to the SCRM Guidelines and Procedures, "In order to make a finding of misconduct, the Committee must determine by a preponderance of the evidence that the Respondent acted, *recklessly, knowingly, or intentionally.*" Two members of the Committee determined that Respondent 1 demonstrated negligence in the discharge of his duties as research mentor and lead author on the publication. He has failed to provide a reproducible description of methods, as well as a statement on uncertainties, errors, and limitations, which would have uncovered the non-standard protocols.

Question 3: [REDACTED]

Regarding Question 3, the Investigation Committee concluded that [REDACTED]

[REDACTED] The Committee concluded that Respondent 1 did not fabricate data [REDACTED] and had not engaged in research misconduct regarding Question 3 (by a vote of 3-0).

To make these determinations the Investigation Committee interviewed Respondent 2, asked Witness 1 about the data used to produce the figure, and created a timeline of the figure's creation (Interviews summarized below and Item 1.4.7). During his Interview, the Committee asked

Member's analysis is included below as Appendix 3. The two other Investigation Committee members were concerned by this analysis and took their time to review it during the meeting.

[REDACTED]

[REDACTED]

Another Committee member discussed that it was ultimately up to the journal's editor to make the decision on what to do. The SCRM Chair mentioned that it would be acceptable for the Investigation Committee to find that [REDACTED], the central claim of the paper, [REDACTED] was still supported. The Committee agreed that [REDACTED] are not critical to support the major claim of the manuscript and do not affect the overall scientific advance presented in a significant way (vote 3-0).

Evaluation of Potential Impact on Awards

As the National Science Foundation, Office of Inspector General is monitoring the Investigation into SCRM Case 22-1, their office will be notified of all case outcomes and provided with a copy of the Final Investigation Report.

SCRM Deliberation

The full Investigation Committee presented the Investigation Report to the SCRM for review on December 15, 2023. Thirteen voting members of the SCRM were in attendance, thus meeting the required nine members needed to form a voting quorum as per the SCRM Guidelines. After a round of introductions, the Investigation Committee discussed its three main findings, and recommendations for corrective actions. The SCRM then asked questions of the Investigation Committee and voted on whether they supported its findings and recommendations.

[REDACTED]

[REDACTED] The Investigation Committee chair then shared with the full SCRM a point of clarification, noting that different researchers use various techniques to process [REDACTED] data and [REDACTED] and that one scan could be processed differently by different scientists which could produce variations in how different scientists display the same data.

A SCRM member then asked if the PI, (Respondent 1) was aware [REDACTED] Investigation Committee member 2 said that they understood that Respondent 1 only saw [REDACTED] did not ask to see the raw data. The Investigation Committee chair replied that as the PI, Respondent 1 should have at least verified the methods used [REDACTED] and provided an adequate description of this method [REDACTED] Another SCRM member noted that in their discipline, a PI and mentor would be responsible for “guiding [REDACTED] and making sure that [REDACTED] is doing this right.” The SCRM Chair and Investigation Chair then both agreed that as the corresponding author on the paper, Respondent 1 was the most responsible for ensuring that the content of the paper was sound.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] The discussion then turned to the role of the journal’s referees in pointing out the inadequacy of the article’s methods description, with both SCRM members and multiple Investigation Committee members agreeing that the journal’s referees failed in this regard.

A SCRM member then asked about the background of the Complainant and whether the Investigation Committee considered his background while reviewing the paper. The chair replied that the Committee weighed [REDACTED]

[REDACTED]

The SCRM then asked about whether the Respondents expressed remorse or defended their actions, with the Investigation Committee members sharing that [REDACTED]

[REDACTED]

Respondent 1 expressed surprise [REDACTED]

The discussion then turned to the Investigation Committee's recommendations for corrective actions, with the SCRM noting that Recommendation 1 (that the NSF be notified) was mandatory. When discussing Recommendations 2 and 3 [REDACTED]

[REDACTED], the discussion focused on how best to have the Respondents notify the journal, with several SCRM members voicing concerns about having the Respondents being delegated to do so without oversight. This concern is now addressed in the revised recommendations that appear below, which requires that the Respondents have oversight from ORI regarding their communications with the journal. The chair of the Investigation Committee also recommended that the Respondents share their suggested corrections with the Investigation Committee members before submitting them to the journal as well.

SCRM Determinations and Recommendations

[REDACTED]

The SCRM voted 13-0 in support of the Investigation Committee's determinations that [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

The SCRM voted 13-0 in support of the Investigation Committee's determination [REDACTED]

[REDACTED] The SCRM voted 12-0, with one member abstaining in support of the Investigation Committee's determination that Respondent 1's actions and lack of mentoring and oversight [REDACTED] constituted Serious Research Error (which did not rise to the level of Research Misconduct).

Regarding Question 3: [REDACTED]

The SCRM voted 13-0 in support of the Investigation Committee's determination [REDACTED]

[REDACTED] The SCRM voted 13-0 in support of the Investigation Committee's determination that Respondent 1 did not fabricate data [REDACTED] and had not engaged in research misconduct regarding Question 3.

Recommendations for Corrective Actions

Based on the concerns discussed in the preceding section, the SCRM strongly recommends the following corrective actions be implemented:

1. That the National Science Foundation be notified of the findings of the Investigation Committee and the SCRM process and be provided with the final Investigation Report.
2. That Respondents [REDACTED] notify the editors [REDACTED] [REDACTED] [REDACTED] (as the Corresponding author, Respondent 1 should take the lead on contacting the journal). [REDACTED] [REDACTED] Respondents 1 [REDACTED] must provide any communications they have with the

journal to ORI for review before submitting them and then copy ORI on any correspondence with the journal editors they have. The journal will ultimately decide whether [REDACTED] [REDACTED] merits full or partial retraction of the article and the ORI will maintain contact with the journal's editors to keep apprised of any decisions or actions taken to resolve this notification.

3. That Respondents 1 [REDACTED] submit an erratum to the editors [REDACTED] [REDACTED] [REDACTED] [REDACTED]

Additionally, the authors should provide a statement of errors and uncertainties in the reported data according to their processes; with the option of also [REDACTED] [REDACTED] As with Recommendation 3, Respondents 1 [REDACTED] must provide any communications they have with the journal to ORI for review before submitting them to the journal and then copy ORI on any subsequent correspondence with the journal editors they have. ORI will maintain contact with the journal's editors to keep apprised of any decisions and resolutions that they make in response to the erratum.

4. [REDACTED] [REDACTED] [REDACTED] [REDACTED]

Conclusion

As detailed in this Investigation Report, the Investigation Committee determined, by a preponderance of the evidence, [REDACTED] [REDACTED] [REDACTED] [REDACTED] and that Respondent 1 committed Serious Research Error because he was negligent in his duties as an advisor and mentor [REDACTED] [REDACTED]

The Investigation committee also determined that the complainant made the relevant allegations with a reasonable basis in fact and without malicious intent and weighed the complainant's status [REDACTED], when making this determination.

Appendix 1

Summary of Relevant Evidence for Inquiry and Investigation

I. Executive Summary and Recommendation

This document summarizes the information obtained from any interviews or emailed questions that both the Inquiry and Investigation committees conducted as well as any documents or other evidence the committees reviewed during the Inquiry and Investigation phases of Case 22-1.

I. Committee Actions and Factual Findings

Relevant Evidence Evaluated during the Inquiry and Investigation Phases

Appendix 1.1: Material Provided by Complainant

Appendix 1.2: Material Provided by Respondents

Appendix 1.3: Office of Research Integrity Evidence gathered during the Inquiry Phase

Appendix 1.4: Office of Research Integrity Evidence gathered during the Investigation Phase

In addition to the documentation in Appendices 1.1-1.4, the Inquiry Committee interviewed the following individuals via Zoom during the Inquiry Phase:

Name	Institution and Title	Relationship to Respondent/Complainant
Witness 1 ⁴	[REDACTED]	Co-Author on Publication
Respondent 2	PII [REDACTED]	[REDACTED]

In addition to the documentation in Appendices 1-4, the Investigation Committee interviewed the following individuals via Zoom during the Investigation Phase

⁴ Initially Witness 1 was listed as a Respondent in the case, but the Inquiry Committee removed him from the list of Respondents [REDACTED]

Name	Institution and Title	Relationship to Respondent/Complainant
Witness 1	[REDACTED]	Co-Author on Publication
Respondent 2	PII [REDACTED]	[REDACTED]
Respondent 1	University of Colorado Boulder, Professor and Chair, Dept. of Chemistry	Last (Lead) Author on Publication in question

Chronology of Events

Attached as Appendix 6 to this Report is a preliminary chronology of events, which the Committee believe to be relevant.

Case Intake and Inquiry Committee Activity

The initial Compliant was received by the Research Integrity Officer (RIO) on December 13, 2022, and involved Allegations 1-7 [Item 1.1]. After consulting with the SCRM Chair and reviewing the evidence provided by the Complainant, the RIO and the SCRM Chair decided that the Complaint should progress to an Inquiry. The Complainant also informed the RIO that he had lodged a similar complaint with the Office of the Inspector General (OIG) for the National Science Foundation (NSF), as there is NSF funding associated with the publication. The RIO and SCRM Coordinator delivered an Inquiry notification to Respondent 1 on December 20, 2022.

According to the Complaint, Respondent 1 is a faculty member in the Department of Chemistry, and Witness 1 [REDACTED]. The Complainant alleged that the Respondents had published a paper in the [REDACTED]. The Complainant provided the initial complaint via email and attached a copy of the article in question, the published supplementary information that accompanied the article, a detailed analysis of the allegations, and two documents cited as sources for the detailed analysis. In the body of the complaint email, the Complainant recommended several sources of data that were pertinent to the allegations (see Appendix 1).

[REDACTED]

[REDACTED]

[REDACTED]

On December 20, 2022, the RIO and the SCRM Administrator met with Respondent 1 in his office to notify him of the Inquiry, ensure that he had no conflict of interest with the Inquiry Committee members, and sequester Nuclear Magnetic Resonance (NMR) data and digital versions of lab notebooks as evidence in the case (Item 3.2-3.4). The RIO also asked Respondent 1 about several other sources of data for sequestration. [REDACTED]

The Inquiry Committee met for the first time on January 4, 2023, to discuss the allegations and plan for the inquiry phase. During its first meeting, the Inquiry Committee decided to contact an expert [REDACTED]

On January 6, 2023, Respondent 1 submitted the [REDACTED]

On January 24, 2023, the RIO and SCRM Administrator visited the [REDACTED]

On February 3, 2023, Expert 1 was provided with case materials to review, including the allegations and analysis provided by the Complainant and [REDACTED]. Expert 1 is a professor in Chemical and Biological Engineering who primarily uses [REDACTED] in his work. Expert 1 provided a preliminary assessment of [REDACTED] on February 15, 2023 (Item 3.7). Expert 1's analysis was later provided to Witness 1 for further review.

On February 6, 2023, Respondent 1 provided a written response to the Allegations (listed below as Appendix 2.2), stating that he strenuously disagreed with the allegations. In this email, Respondent 1 also noted that the Complaint was similar to concerns that had been submitted [REDACTED]. Respondent 1 also noted that he doubted the Complainant had attempted to reproduce any of the research the publication was based on as the "catalysts used in our work have been developed and made in our own lab...which requires a certain level of expertise." Respondent 1 offered a detailed response to several of the Allegations and provided several figures to support his rebuttal.

On February 9, 2023, the SCRM Administrator emailed the Editor [REDACTED] to ask whether the journal made any adjustments [REDACTED] during the publication and copy-editing process. The Editor provided an email and two figures responding to these questions on March 17, 2023 (Item 3.9).

On February 21, 2023, in response to a request from the Inquiry Committee, Respondent 1 provided the Adobe Illustrator file that was submitted [REDACTED] to allow further review by Expert 1. On February 27, 2023, Respondent 1 was asked whether he detected any differences

between the Adobe Illustrator file he provided on February 21, 2023, and the file that was ultimately published in the journal. Respondent 1 also provided a PowerPoint document that [REDACTED]

On February 28, 2023, the Inquiry Committee asked Witness 1 three questions about [REDACTED]

On March 1, 2023, [REDACTED] in the Inquiry and notified via email.

On March 8, 2023, the Inquiry Committee met for a second time to discuss the evidence that had been gathered and what additional evidence was needed. The Inquiry Committee decided to reach out to a second researcher (Expert 2) with expertise [REDACTED]

On March 8, 2023, Witness 1 was provided with Expert 1's preliminary assessment [REDACTED] and asked to provide feedback and an independent analysis [REDACTED]

Expert 2, [REDACTED], was first contacted on March 10, 2023, and asked to analyze [REDACTED] Expert 2 provided an assessment of Allegations 3 and 4 and figures 2c and 2d on April 3, 2023 (Item 3.10).

On March 14, 2023, Witness 1 provided his initial response to the Inquiry Committee's questions and Expert 1's analysis (Item 3.8). Witness 1's response and assessment were provided back to Expert 1 for further analysis and comments. Expert 1 then reviewed this information along with additional data provided by Witness 1 and provided his second assessment on April 8, 2023.

On April 4, 2023, the RIO provided for one 60-day extension of the deadline to complete the Inquiry.

On April 8, 2023, Expert 1 provided his second Assessment [REDACTED] after reviewing Witness 1's response and independent analysis. On April 13, 2023, the Inquiry Committee Chair had a follow-up call with Expert 1 to further discuss his assessment.

On April 20, 2023, the Inquiry Committee, SCRM Chair, and RIO met with Witness 1 to ask additional questions [REDACTED] based on his independent analysis of the data. Witness 1 was asked [REDACTED]

[REDACTED]

On May 3, 2023, the Inquiry Committee, SCRM Chair, RIO, and SCRM Admin met with Respondent 2 to interview him about the allegations and the analyses provided by Expert 1 and Witness 1. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

On May 4, 2023, the Summary of Relevant Evidence for the Inquiry Phase was provided to Respondents 1 and 2 for review and comment.

After reviewing the Complainant's Allegations, the written responses from the Respondents, Experts, and Witness 1, and interviewing Respondent 2 and Witness 1, the Inquiry Committee concluded by a vote of 3-0 that the evidence presented in response to the Allegations warranted a formal Investigation into Allegation 2 [REDACTED]

On May 16, 2023, the SCRM voted 10-0 that the evidence supporting the Allegation 2 [REDACTED] [REDACTED] merited a full formal Investigation by an Investigation Committee empaneled by the SCRM.

Investigation Committee Activity

The 3-person Investigation Committee was tasked with reviewing all the evidence gathered during the Inquiry phase and requesting new evidence as needed. The evidence reviewed by the Investigation Committee during the Investigation phase is summarized here and listed below as Appendix 4: Evidence compiled by the Office of Research Integrity during the Investigation Phase.

On June 28, 2023, the Investigation Committee met for the first time. The Charge to the Investigation Committee and details of the case were reviewed. At the conclusion of the meeting, the Committee agreed to review the case documents gathered during the Inquiry phase (listed below in Appendices 1, 2, and 3).

On July 21, 2023, the Investigation Committee met for a second time. During the second meeting the Committee met with the Chair of the Inquiry Committee to further review the evidence gathered during the Inquiry Phase and to ask questions about the case. During this meeting the Investigation Committee and Inquiry Committee Chair discussed that [REDACTED]

[REDACTED] The Investigation Committee discussed that they wanted to interview both Respondents and contact the Director of CU's Responsible Conduct of Research (RCR) Program to answer whether either Respondent had completed RCR training as required by the NSF.

On August 15, 2023, the Investigation Committee met for a third time to Interview Witness 1 about the details of the case, specifically to answer questions about [REDACTED]

On August 22, 2023, the Investigation Committee had a brief follow up meeting to discuss what was learned during the Interview with Witness 1 and to formulate questions to ask during a future Interview with Respondent 2.

On August 28, 2023, three questions from the Inquiry Committee and a request to schedule an interview were emailed to Respondent 2 (detailed in the section below). [REDACTED]

On September 14, 2023, the Investigation Committee met and Interviewed Respondent 2 to ask the three questions sent on August 28, 2023, and several follow-up questions that came up during the Interview (details provided in the section below).

On September 27, 2023, the Investigation Committee met and Interviewed Respondent 1 to ask questions about his level of oversight [REDACTED]

On October 6, the Investigation Committee’s Summary of Relevant Evidence was provided to the Respondents for review and comment.

Summary of Interviews with Witness 1 and Respondents 1 and 2

The Investigation Committee conducted three interviews during the Investigation Phase to evaluate whether [REDACTED] engaged in the alleged research misconduct. The first with Witness 1 (August 15, 2023), [REDACTED] (September 14, 2023), and the third with Respondent 1 (September 27, 2023).

Interview with Witness 1, August 15, 2023

During the first Interview, Witness 1 recounted how his lab [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

[REDACTED]
[REDACTED]
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[REDACTED]
[REDACTED]
[REDACTED]

[REDACTED]
[REDACTED]

[REDACTED]

[REDACTED]

Interview with Respondent 2, September 14, 2023

The Investigation Committee interviewed Respondent 2 on September 14, 2023. Prior to the Interview, Respondent 2 was provided with three questions from the Investigation Committee via email. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Interview with Respondent 1, September 27, 2023

Prior to the meeting, Respondent 1 was asked to provide a draft of the [REDACTED]
[REDACTED] Respondent 1 provided a draft [REDACTED]
[REDACTED] on September 24, 2023.

Respondent 1 was given an opportunity to comment at the beginning of the Interview, and he noted that the Complainant was understood to be a competitor [REDACTED] and that the complaint was extensive and largely unfounded. The Committee recounted some of what had been learned during the Interview with [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

One Committee member then asked if Respondent 1 had provided any instruction on data analysis, as the senior author on the paper.

Respondent 1 replied [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

The Investigation Committee then asked [REDACTED] and whether he had provided guidance to Respondent 1 on the creation of the figure, [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

[REDACTED]
[REDACTED]
[REDACTED] Respondent 1 replied that the study was complicated with data coming

from multiple labs and that each lab provided some description of what they'd done with data processing, but that he should have provided more information earlier in the process and intended to correct this.

The Committee then asked, how Respondent 1 ensured that all the data and results presented in the paper were actually generated correctly and were stored and accessible to other researchers for the purposes of rigor and reproducibility. Respondent 1 replied that his lab has a good tradition of cross-checking each other's work internally. [REDACTED]

[REDACTED]

[REDACTED]

Respondent 1 noted that he was just now hearing [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED] He stated that he intended to both use the [REDACTED] to address some of the criticism of the paper and that he also intended to work with the editor [REDACTED] [REDACTED] to correct the issues uncovered during SCRM Case 22-1.

Respondent 1 was then asked why he did not require [REDACTED]
[REDACTED] Respondent 1 replied that he received long emails from the Provost and NSF and that he clicked through and took the training. [REDACTED]
[REDACTED] Respondent 1 stated that he did not know about the RCR training options available through CU.

At the conclusion of the Interview, Respondent 1 stated [REDACTED]
[REDACTED]
[REDACTED] The investigation committee responded that they considered such efforts optional and potentially helping with their understanding of the case. On October 6, 2023, the Investigation Committee Summary of Relevant Evidence was provided to the Respondents for review and comment.

Appendix 1.1: Material Provided by Complainant

Item No.	Description
1.1.1	Initial Complaint Email with list of attachments and suggested sources for data Sequestration
1.1.2	Misconduct Analysis PDF from Complainant that lists and details the seven allegations in Depth
1.1.3	[REDACTED]
1.1.4	[REDACTED]
1.1.5	References 17 and 22 from Misconduct Analysis (Document 1.2)

Appendix 1.2: Material Provided by Respondents

Item No.	Description
1.2.1	[REDACTED]
1.2.2	Response to Allegations with figures from Respondent 1 (sent 2/6/23)
1.2.3	Originally submitted Adobe Illustrator [REDACTED]
1.2.4	[REDACTED]
1.2.5	[REDACTED]

Appendix 1.3: Index of Office of Research Integrity Evidence

Item No.	Description
1.3.1	[REDACTED]
1.3.2	[REDACTED]
1.3.3	[REDACTED]
1.3.4	[REDACTED]
1.3.5	[REDACTED]
1.3.6	Inquiry Referral Letter from NSF/OIG and attachments in Zip File (sent 1/30/2023)
1.3.7	Expert I's Preliminary Analysis (sent 2/15/2023)
1.3.8	[REDACTED]
1.3.9	Witness I's answers to Questions from Inquiry Committee and response to Expert I's Preliminary Assessment (sent 3/14/2023)
1.3.10	Editor [REDACTED] response to questions [REDACTED] during publication (sent 3/17/23)
1.3.11	Analysis of Allegations 3 and 4 submitted by Expert 2 (sent 4/3/23)
1.3.12	Second Assessment [REDACTED] provided by Expert 1 (sent 4/8/23)
1.3.13	Video Recording/Transcript of the Inquiry Committee's Interview with Respondent 2 (conducted 5/3/23)

Appendix 1.4: ORI Evidence gathered during the Investigation Phase

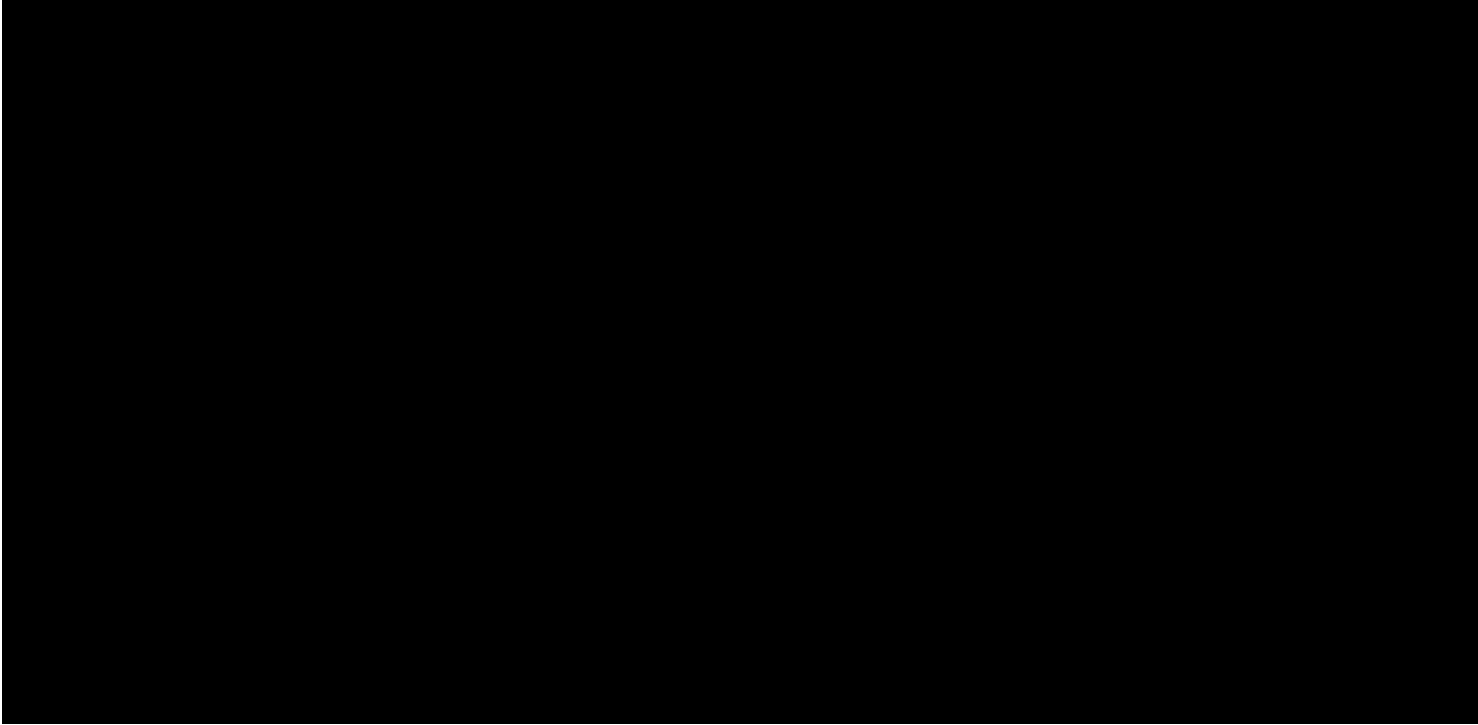
Item No.	Description
1.4.1	Inquiry Report Final Version_052323
1.4.2	Charge to the Investigation Committee 22-1
1.4.3	Critique Article from Complainant and Associates [REDACTED]
1.4.4	Summary of Inquiry Committee Meeting with Witness 1
1.4.5	[REDACTED] (submitted by Witness 1 on 3/16/23)
1.4.6	[REDACTED] provided by Expert 1 on 8/23/23)
1.4.7	[REDACTED] (created by Inv. Comm. 8/24/23)
1.4.8	Video Recording/Transcript of the Investigation Committee's Interview with Respondent 2 (conducted 9/14/23)
1.4.9	Slides 1-4 presented by Respondent 2 during Interview with Inv. Comm.
1.4.10	[REDACTED] Respondent 2 during Interview with Inv. Comm.
1.4.11	[REDACTED] (provided by Respondent 1 on 9/24/23)
1.4.12	Summary of Meeting with Respondent 1 (from 9/27/23)

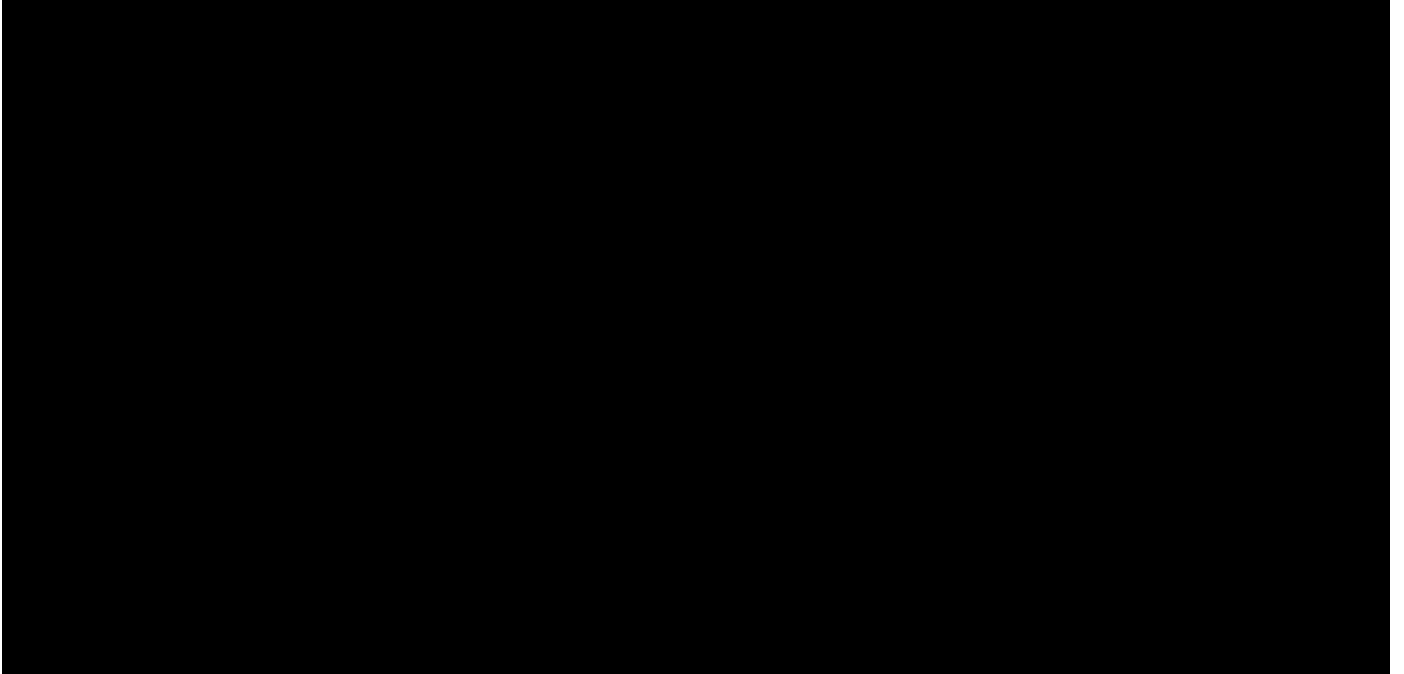
Appendix 2

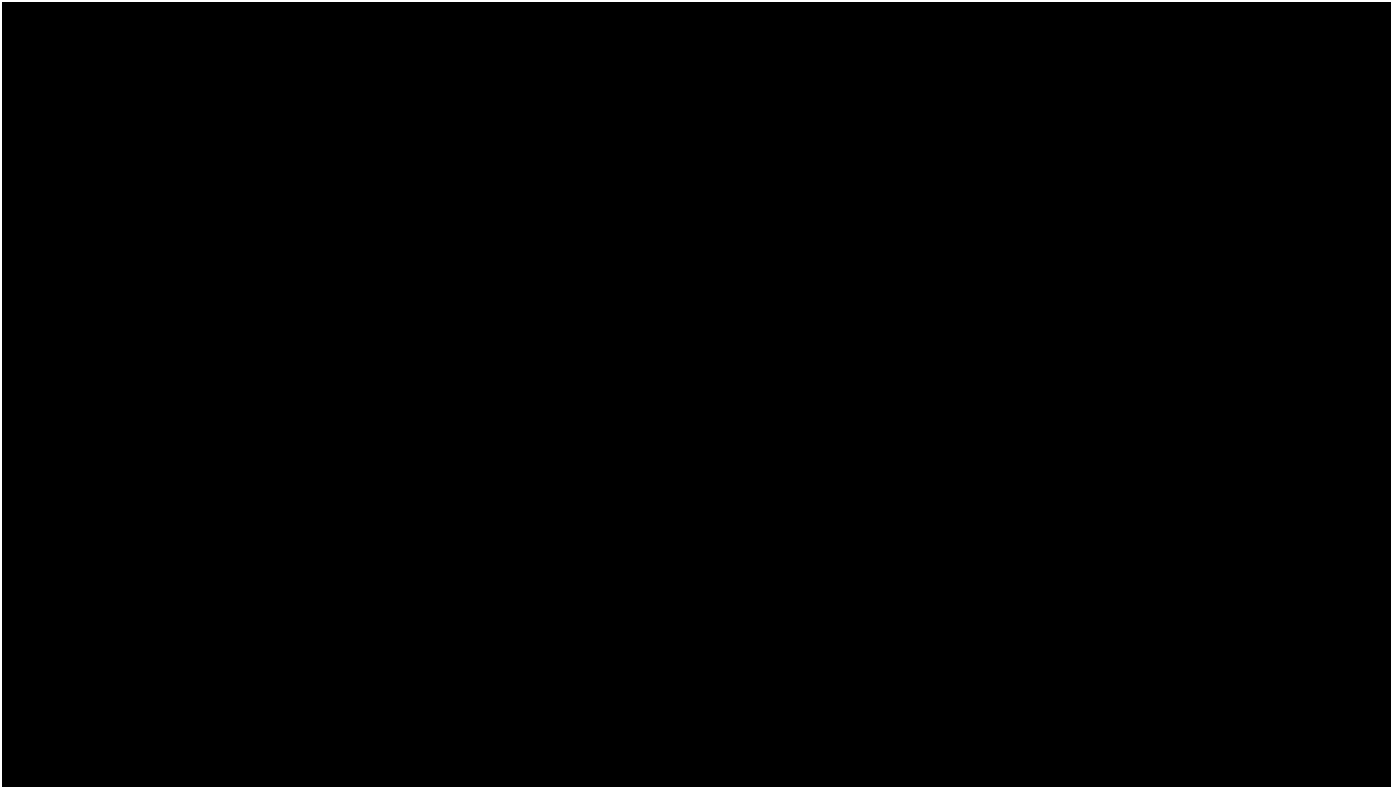
Investigation Committee Meetings

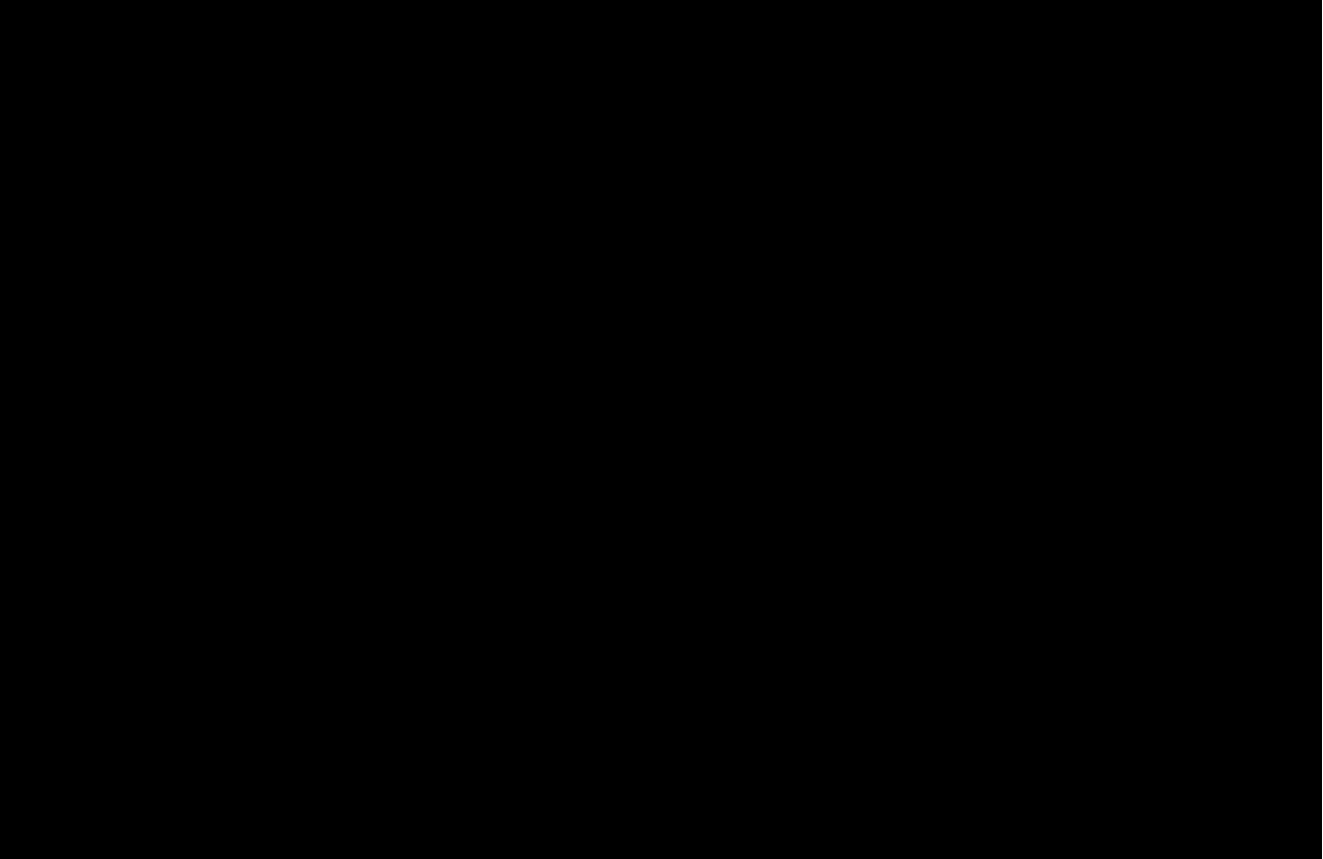
Date	Committee Meeting Purpose
6/28/2023	Investigation Committee meets for the first time
7/21/2023	Investigation Committee meets with Inquiry Committee Chair
8/15/2023	Investigation Committee meets to Interview Witness 1
8/22/2023	Investigation Committee meets briefly to review Witness 1 Interview
9/14/2023	Investigation Committee meets to Interview Respondent 2
9/27/2023	Investigation Committee meets to interview Respondent 1
11/7/2023	Investigation Committee meets to discuss case findings and outcomes

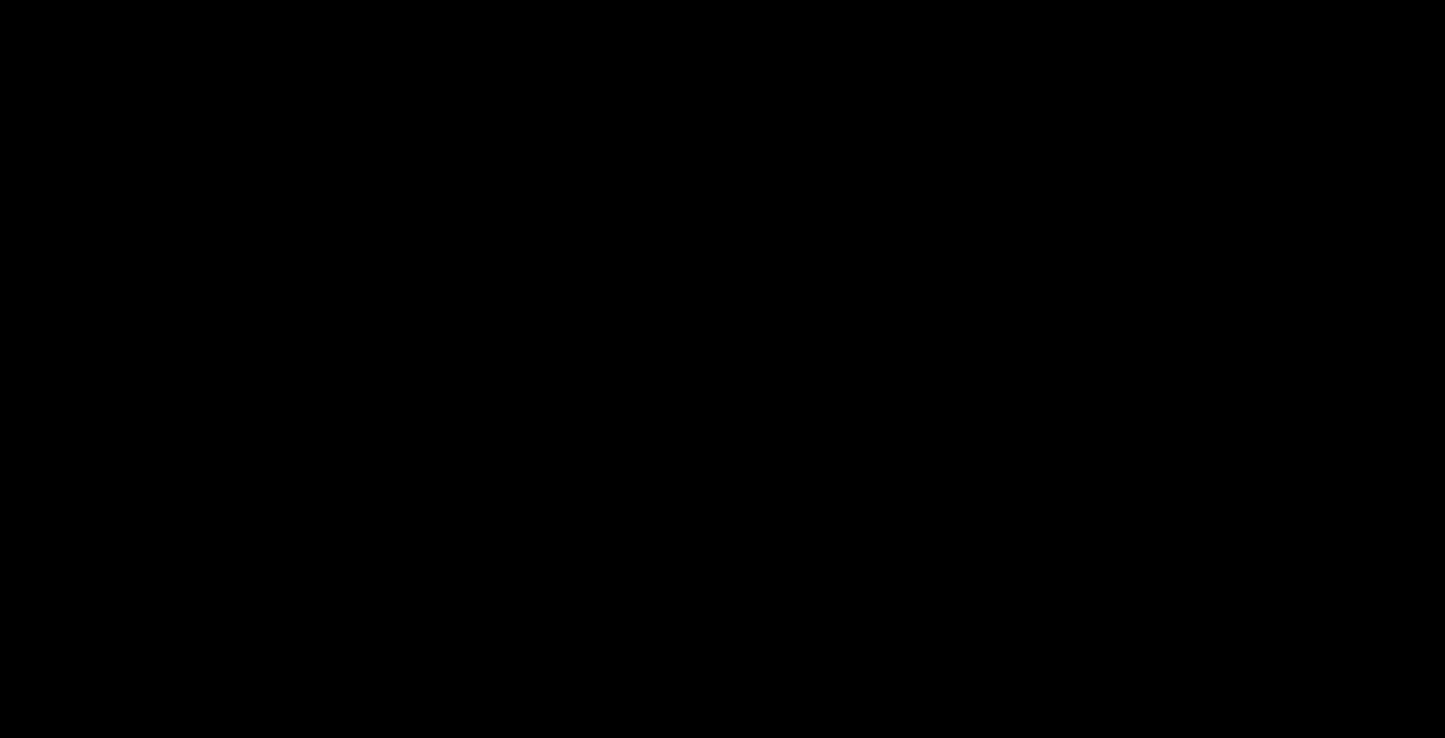
Appendix 3:

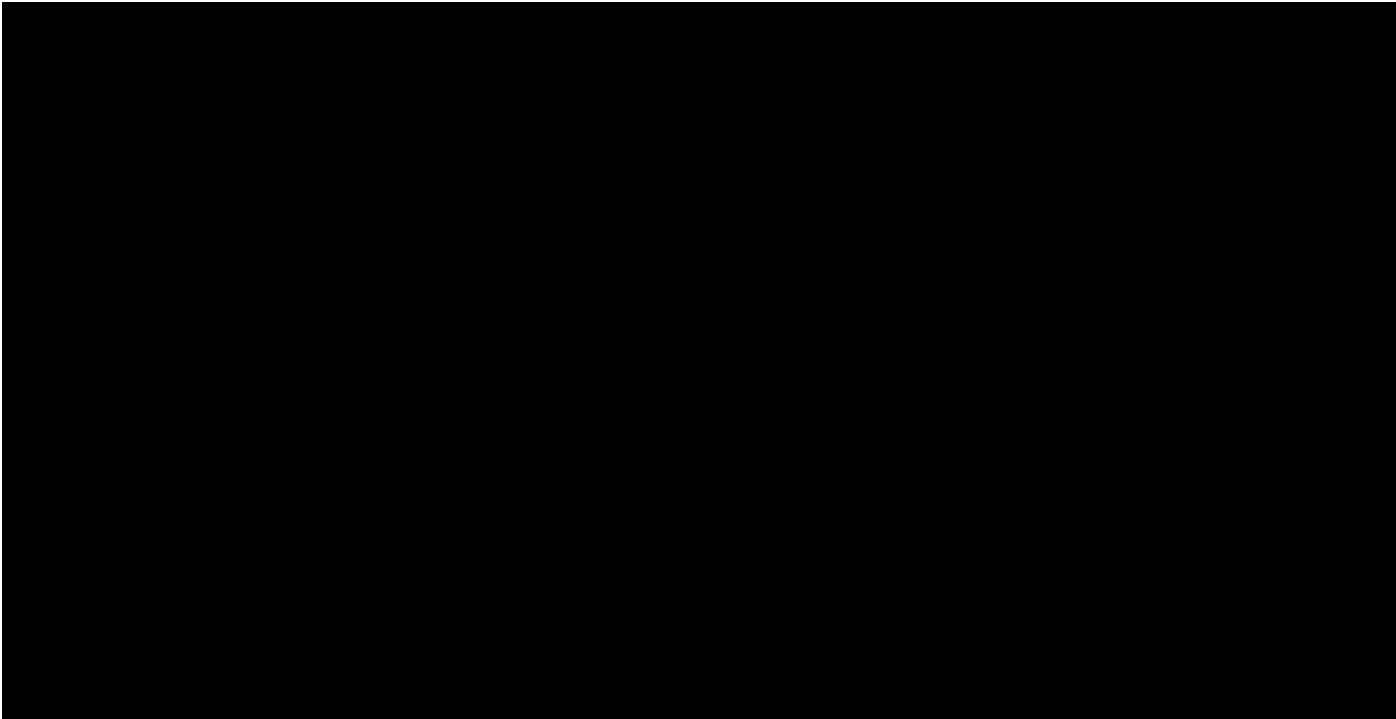


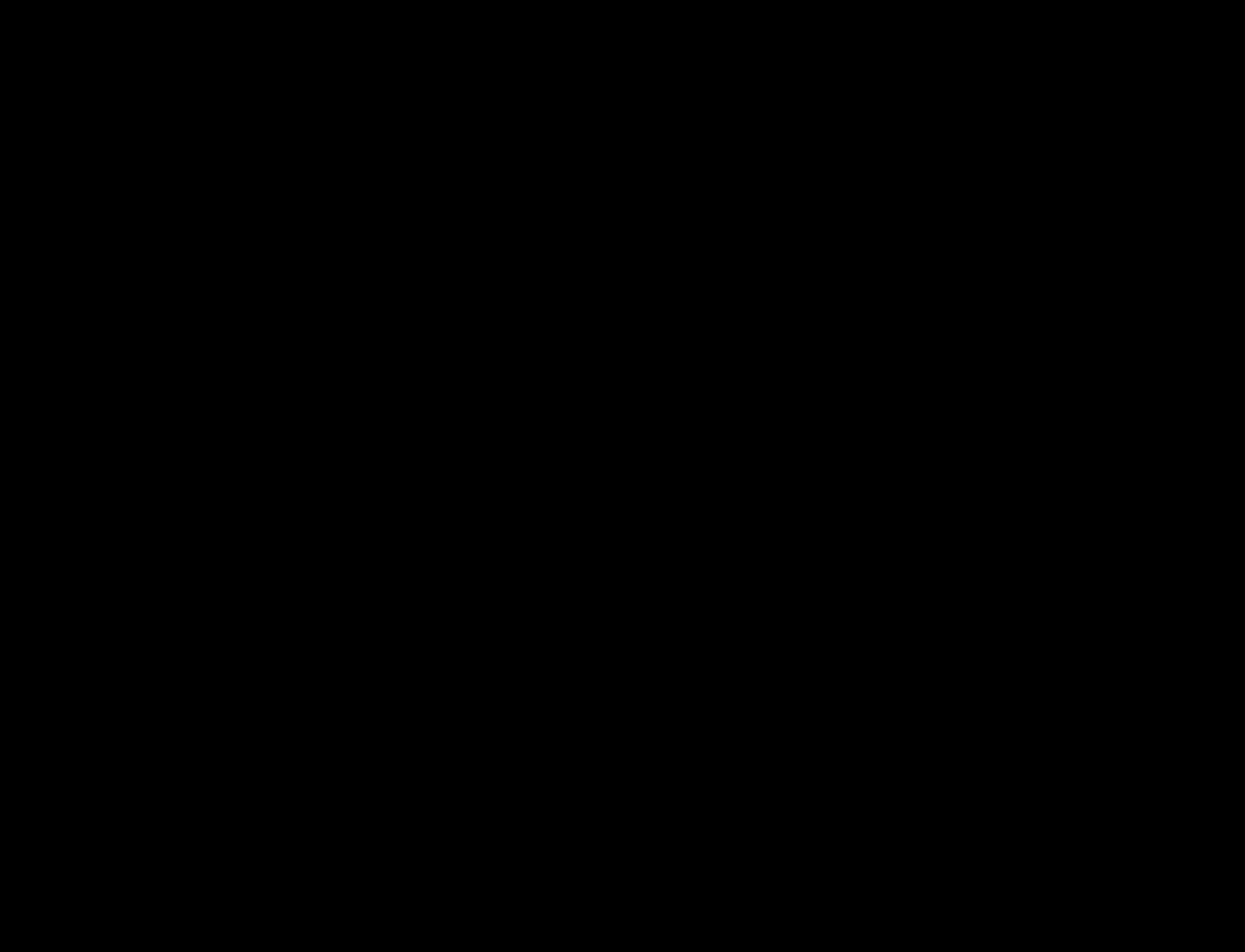


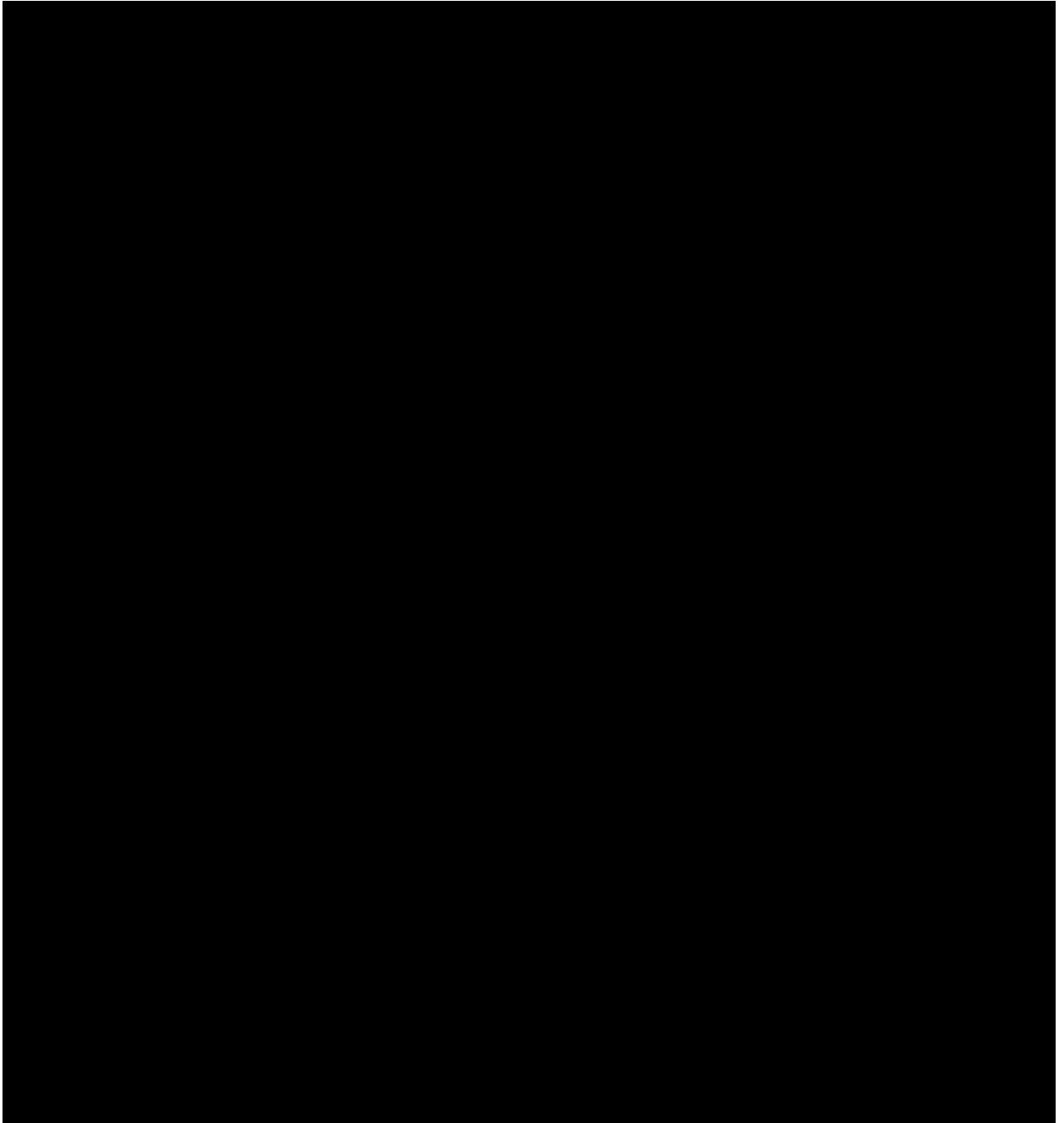


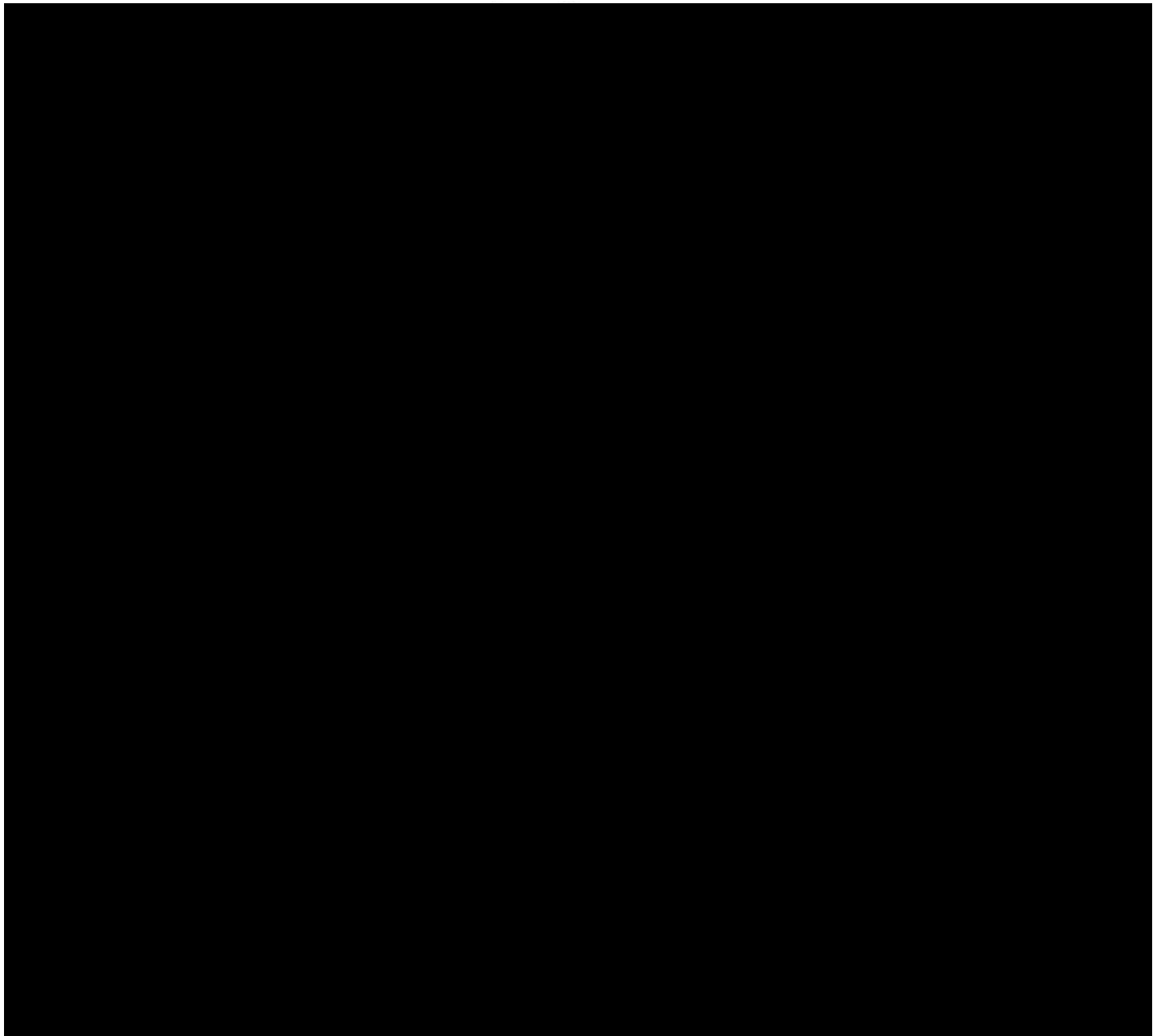












Appendix 4: Timeline of Events

Date	Description
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
12/13/2022	Initial Complaint emailed to RIO including PDF with detailed allegations and analysis
12/20/2022	RIO meets with Respondent 1 to notify him of the complaint, allegations and inquiry, providing him with the documents provided by the Complainant (Appendix 1); [REDACTED]
1/4/2023	First Meeting of Inquiry Committee
1/6/2023	Respondent 1 provides requested [REDACTED]
1/24/2023	RIO and SCRM Coordinator meet with Respondents 2 and 3 [REDACTED]
1/26/2023	NSFOIG contacted CU RIO via telephone notifying him that they had received a similar Complaint
1/30/2023	NSFOIG sends email and information request via email formally notifying CU RIO of Complaint (with documents provided by Complainant to NSF OIG in attached zip file)
2/3/2023	Expert 1 agrees to serve and signs Confidentiality Agreement
2/6/2023	Respondent 1 provides his Response to the Inquiry via email
2/9/2023	SCRM Administrator emailed the Editor [REDACTED] to ask whether the journal made any alterations [REDACTED]
2/15/2023	Expert 1 provides his Preliminary Analysis
2/21/2023	Respondent 1 provides the Adobe Illustrator file that was submitted to the journal for [REDACTED]
2/27/2023	Respondent 1 provides a [REDACTED]
2/28/2023	Then Respondent 2 (later Witness 1) asked several questions via email about his relationship to the [REDACTED]
3/1/2023	[REDACTED], PII, named as Respondent 2
3/8/2023	Second Meeting of Inquiry Committee
3/8/2023	Respondents 2 and 3 removed from Respondent list; Respondent 3 changed to Witness 1
3/8/2023	Witness 1 asked to provide his review of Expert 1's Preliminary Analysis
3/8/2023	[REDACTED]

3/14/2023	Witness 1 provides his independent analysis [REDACTED] Expert I's Preliminary Analysis
4/3/2023	Expert 2 provides Analysis via email
4/5/2023	60-Day Extension Authorized by Research Integrity Officer
4/8/2023	Expert 1 provides his second Assessment after further reviewing Witness 1's response
4/13/2023	Inquiry Committee Chair has follow-up call with Expert 1
4/20/2023	Inquiry Committee Meeting with Witness 1, SCRM Chair, and RIO
5/3/2023	Inquiry Committee meeting to interview [REDACTED] via Zoom
5/4/2023	Summary of Relevant Evidence provided to [REDACTED] via email
5/9/2023	Draft Version of Inquiry Report provided to SCRM
5/16/2023	SCRM Meeting to Review and Vote on the Recommendations of the Inquiry Committee
6/28/2023	Investigation Committee Meets for the first time
7/21/2023	Investigation Committee Meets with Inquiry Committee Chair
8/15/2023	Investigation Committee Meets to Interview Witness 1
8/22/2023	Investigation Committee Meets briefly to review Witness 1 Interview
8/28/2023	SCRM Admin emails Inv. Comm.'s questions to [REDACTED]
9/14/2023	Investigation Committee Meets to Interview [REDACTED]
9/24/2023	Respondent 1 provides [REDACTED] [REDACTED]
9/27/2023	Investigation Committee Meets to Interview Respondent 1
10/6/2023	Investigation Summary of Relevant Evidence Provided to [REDACTED] via email
11/7/2023	Investigation Committee Meeting to discuss Investigation Findings and Recommendations
12/15/2023	SCRM Meeting to review Investigation Report and vote on Findings and Recommendations
12/22/2023	RIO Submitted Final Investigation Committee Report to Provost/Deciding Official

