

Closeout for M96090025

In carrying out his research, the subject¹ collected samples, treated them in his laboratory, and then sent them to testing facilities for analysis. In September 1996, we received a manuscript² that described the authors' analysis of, and their unsuccessful efforts to reproduce, the subject's data. We were subsequently contacted by the complainants,³ who alleged that the subject falsified data, *i.e.*, he added material to his samples to pre-determine the results the facilities would obtain when his samples were tested. The complainants further alleged that the subject had become aware of the authors' re-testing of his samples, and consequently was attempting to retrieve and destroy his samples from the facilities. Therefore, we issued a subpoena for, and obtained, the remaining samples from the authors.

The subject became aware of the allegation and contacted us, denying he had tampered with his samples. He also raised many technical issues related both to the authors' method of analysis and to his own analytical techniques. The subject argued that this was a scientific dispute over analytical methods and the interpretation of the resulting data, and not a case of misconduct in science.

The authors contacted us and indicated there had been a contamination problem during their testing of some of the subject's samples. They wanted to re-test some of the samples to verify their earlier results and ensure the complainants' allegation was supported by the results. The results of their re-testing confirmed their earlier findings, which they argued supported the complainants' allegation against the subject.

Before we could assess whether the allegation constituted possible misconduct, or would more properly be characterized as a scientific dispute, the subject's University informed us that it had become aware of the allegation and was taking steps to investigate it. We discussed the matter with a University administrator⁴ and agreed to defer our inquiry pending completion of the University's inquiry. The University asked two independent scientists to learn the subject's methodology and attempt to reproduce his results. Following its inquiry, the University concluded there was enough substance to the allegation to proceed to an investigation, and we agree to defer our investigation while the University conducted its investigation.

The University's investigation Committee wanted to test some of the subject's samples that we had in our possession. We transferred of some samples to a scientist that the Committee designated. Based on the results of these tests, the Committee requested an extension to carry out tests on additional samples and to

¹ (footnote redacted).

² (footnote redacted).

³ (footnote redacted).

⁴ (footnote redacted).

complete the preparation of the final investigation report. The Committee also met with the subject to obtain his explanation for the test results and discuss the draft of their report. The subject responded to their draft and answered their questions about the test results.

The University's Adjudicator⁵ provided us with a cover letter, the report, and attachments. The Committee assessed the allegation by four main criteria: (i) analysis of the material in a selection of the subject's samples; (ii) analysis of the plausibility and replicability of the subject's methodology; (iii) comparison of the results obtained from the subject's samples with known "control" data; and (iv) the relative timing of the allegation about his data and the subject's questioning of his own results.

Regarding the nature of the material in the subject's samples (criterion i), the Committee report described the results of the two scientists who worked with the subject to learn his collection method during the inquiry, as well as the additional tests it requested. Because of the differences in the methodologies of the two scientists and the subject, we agree with the Committee's conclusion that their inability to reproduce the subject's results did not substantiate the allegation. In the first round of tests the Committee requested, one sample showed the presence of an anomalous material (AM). The material was anomalous because it is not known to be naturally occurring in the location where the sample was collected. Based on the presence of the AM, the Committee requested another round of tests on samples specifically chosen such that the AM would not be expected in those samples. Those results showed that half of the samples contained the AM, while half did not—and the half that contained the AM were from the same location as the AM-containing sample from the first round test. The subject arranged for a test of his samples from a different laboratory, and those results did not show the presence of the AM. The subject raised concerns about the chain of custody of the samples and suggested that some samples may have been inadvertently contaminated. Although the Committee noted "the contamination explanation cannot be discounted," it concluded that intentional alteration of some samples by the subject "seems a slightly more likely explanation." In our view, the evidence of alteration adduced by the Committee must be considered in light of the substantial chain of custody issues raised by the subject and the Committee's conclusion (discussed below) that there was no evidence that the subject's samples were altered so as to yield particular results. We therefore, agree with the Committee's conclusion that the evidence does not support the allegation.

The Committee analyzed the plausibility and replicability of the subject's methodology (criterion ii). It noted that the subject's methodology has changed "drastically" over the years, that his techniques are difficult to master, and two independent attempts to duplicate the subjects results were unsuccessful.

⁵ (footnote redacted).

Although, it thought the examples cited by the subject were not conclusive, it found some evidence supporting the subject's results. We agree with the Committee's conclusion that the ambiguities and uncertainties in the subject's methodology do not support the allegation.

The Committee evaluated the likelihood that the subject was trying to manipulate his data to obtain a pre-determined result (criterion *iii*). A scientist⁶ had provided the Committee with a comparison of the subject's test results with known "control" results. This scientist's analysis showed remarkable agreement between the two sets of results, and he suggested that such close agreement could be obtained only if the subject had manipulated his samples in such a way as to match the "control" result. In response, the subject provided the Committee with his own analysis of his data with the "control" data. The subject's analysis showed substantially less agreement, and he suggested that the lack of uniformity was indicative of honest research results. Additionally, the subject pointed out that his data included samples in which his results were practically impossible to reconcile with the "control" data, yielding results so obviously wrong they would not have been intentionally fabricated. The subject also provided the Committee with scientific reasons why some of his results should show good agreement with the "control" data and others would not. He explained that some of these problems were scientific in nature and were of current interest, and debated within, the relevant literature. The Committee's analysis showed that both the scientist's and the subject's representations of the data had inaccuracies. The Committee learned that there was ambiguity associated with the "control" data itself. Ultimately, it concluded that such an analysis was not especially useful because it should be expected that the subject's method could be expected to work some of the time and, alternatively, for those results in which the subject's method didn't work, it did not mean no misconduct took place. We agree with the Committee's conclusion that there existed convincing scientific explanations for the agreements between the subject's data and the "control" data.

With regard to when the subject began to repudiate his results (before or after the allegation was made—criterion *iv*), the Committee noted the subject now disavows his data (stating that it is unreliable due to the presence of different materials), and there was some evidence that he began to do so before the allegation was made. Accordingly, we agree with the Committee's conclusion that the relative timing of the subject's repudiation of his previous research results does not support the allegation.

To summarize, the Committee concluded that a preponderance of the all the evidence did not support the allegation made against the subject. The Adjudicator's cover letter stated that he reviewed the Committee's report and concurred with its

⁶ (footnote redacted).

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conclusion. He said the University would take reasonable steps to counter the damage to the subject's professional reputation.

We found the Committee's report to be objective and thorough, and we concur with its conclusions concerning the allegation of misconduct in science. Although the Committee concluded that some samples seemed likely to have been altered by the subject (criterion *i*), there was no evidence that the samples were altered to achieve a pre-determined result (criterion *iii*)—which in our view (consistent with the Committee's conclusions) precludes a finding of culpable action necessary to conclude that any such alterations constituted a serious deviation from accepted practices. Therefore, this investigation is closed and no further action will be taken on this case.

Many of the Committee's efforts went well beyond investigating the allegation of misconduct, and were similar to those that a scientist carrying out research in this field would take to verify the subject's reported results. Indeed, the Committee went so far as to map out future research that could be conducted to test the reliability of the subject's results. We think any remaining issues are best resolved by the community in which the subject practices. While members of the subject's research community may find it disturbing that no one has completely duplicated the subject's results, we also note that the subject has himself repudiated them and the methods he used to obtain them. Issues such as replicability, sample analysis, reliability of control dates, and the amount and depth of scientific detail in publications, are at the heart of the scientific enterprise and are—as they should be—addressed by the scientific community in the ordinary practice of research.

cc: Integrity, IG