CONFIDENTIAL: INVESTIGATION REPORT

Case Number: 2025-0814 **Date:** Completed April 15, 2026

I. INTRODUCTION & ADMINISTRATIVE DETAILS

On January 13, 2026, the Deciding Official, Vice Chancellor Krista Walton, initiated a formal investigation based on the recommendations of the Inquiry Committee. The Investigation Committee was convened to determine whether research misconduct occurred in compliance with NC State University REG 10.00.02.

A. Participant Identification

Respondent | Susan Schiffman, Ph.D., Adjunct Professor and Visiting Research Scholar, Lampe Joint Department of Biomedical Engineering, ssschiff@ncsu.edu

Respondent's Counsel | Matthew Zapadka, Arnall Golden Gregory LLP, matthew.zapadka@agg.com

Complainant | TC Heartland LLC

B. Investigation Committee Members

The members below have affirmed they possess no known conflicts of interest and have the appropriate scientific expertise to evaluate the evidence.

Chair | David Dorman, D.V.M., Ph.D., Professor, Molecular Biosciences
Member| Carolyn Mattingly, Ph.D., Distinguished Professor, Biological Sciences
Member| Sue Fenton, Ph.D., Professor, Biological Sciences, and Director, Center for Human Health and the Environment
Member| Jeff Yoder, Ph.D., Professor, Biological Sciences, and Executive Director, Genetics and Genomics Academy
Member| Shobhan Gaddameedhi, Ph.D., Associate Professor, Biological Sciences

II. ALLEGATIONS & PHS JURISDICTION

A. Background of the Matter In a court filing, Heartland LLC alleged that Dr. Schiffman omitted results from assays performed by Litron Laboratories that would have contradicted conclusions reached in a published article (Schiffman SS, Scholl EH, Furey TS, Nagle HT. Toxicological and pharmacokinetic properties of sucralose-6-acetate and its parent sucralose: *in vitro* screening

assays. J Toxicol Environ Health B Crit Rev. 2023 Aug 18;26(6):307-341. doi: 10.1080/10937404.2023.2213903). The allegation was referred to the NC State Research Integrity Officer by Deputy General Counsel, Shawn Troxler.

B. Federal Support

- **No Federal Support**

C. Formal Allegations Under Investigation

- **Allegation:** Susan Schiffman allegedly falsified data through omission in the published article - Schiffman SS, Scholl EH, Furey TS, Nagle HT. Toxicological and pharmacokinetic properties of sucralose-6-acetate and its parent sucralose: *in vitro* screening assays. J Toxicol Environ Health B Crit Rev. 2023 Aug 18;26(6):307-341. doi: 10.1080/10937404.2023.2213903
- **Source/Basis:** ***TC Heartland LLC v. Susan S. Schiffman***, No. 1:23-cv-00665, Amended Complaint (M.D.N.C. July 24, 2025) [Document # 2025-0814-01]

III. PROCEDURAL HISTORY

A. Inquiry Summary

The inquiry into alleged research misconduct by Dr. Susan Schiffman was initiated on **October 9, 2025**, after the NC State University Research Integrity Officer (RIO) was notified of allegations via a court filing by Heartland Foods.

1. **Key Dates and Milestones**
    - **October 9, 2025:** The Inquiry Committee was convened to review allegations of falsification.
    - **November 3, 2025:** The Inquiry Committee issued its initial report.
    - **December 18, 2025:** The committee reconvened to discuss written comments and additional documentation provided by Dr. Schiffman.
    - **January 12, 2026:** An addendum to the inquiry report was issued, reaffirming the recommendation for a formal investigation.

2. **Specific Charges Referred for Investigation**

The committee found sufficient evidence to warrant a formal investigation into **Research Misconduct in the form of Falsification** regarding the article "Toxicological and pharmacokinetic properties of sucralose-6-acetate and its parent sucralose in vitro screening assays". The specific charges include:

- **Omission of Contradictory Data:** The Respondent allegedly failed to report negative In vitro MultiFlow® DNA damage assay in TK6 cells (genotoxicity) results from Litron Laboratories that contradicted the positive results for this

assay reported by BioReliance and published in the article.

- **Failure to Disclose Conflicting Repeat Tests:** Evidence suggests the Respondent received a positive result in July 2020 followed by a negative repeat result in January 2021 from the same laboratory (BioReliance), but only published the initial positive data.

B. Evidence Sequestration & Security

Note that the research records for this case were not stored in NC State computers, rather the Respondent maintained them in Dropbox.

- **Sequestration Date(s):**
  - September 5, 2025
    - **Method:** A records request was submitted to the University Records Officer for any emails that may be relevant to the case.
  - September 15, 2025
    - **Method:** Respondent provided access to the Dropbox storage folder.

C. Evidence Collection & Interviews

- **Interviews:**
  - Dr. Susan Schiffman, Respondent - February 23, 2026 accompanied by legal counsel, Matthew Zapadka
  - Dr. H. Troy Nagle, Distinguished Professor, Electrical and Computer Engineering, Co-author of article - February 23, 2026
  - Drs. Nagle and Schiffman were interviewed together.

IV. ANALYSIS PER ALLEGATION

A. Evidence Assessment (Allegation #1)

The sole allegation the Investigation Committee focused on related to the omission of contradictory data from a pair of Multiflow assay results performed by BioReliance (positive findings that were published) and Litron Laboratories (negative findings that were not published).

The article titled "Toxicological and pharmacokinetic properties of sucralose-6-acetate and its parent sucralose in vitro screening assays" describes the results of a single multiflow assay conducted by BioReliance under their protocol entitled In Vitro Clastogenic, Aneugenic, or Non-Genotoxic (CAN) FlowScreen Assay in TK6 Cells (Schiffman et al., page 311). Results from this assay are provided in the published manuscript (Schiffman et al., pp 316-317, Tables 3 and 4). The authors conclude that "The results of the MultiFlow® assay in TK6 cells for sucralose-6-acetate indicated that sucralose-6-acetate exhibited a prototypical clastogenic signature for both +S9 and -S9 conditions. The fold-increases in γH2A× and nuclear p53 relative to control for the +S9 and -S9 treatments are shown in Tables 3 and 4 respectively. A

clastogenic call was made for the +S9 treatment in Table 3 because fold-elevation in 3 consecutive concentrations of sucralose-6-acetate met or exceeded the GEF cut-offs for the 24-hr γH2A× (1.31) and the 24-hr nuclear p53 (1.12) biomarkers. The lowest observed concentration of genotoxicity with S9 for sucralose-6-acetate was 353 µg/ml (803 µM). A clastogenic call was detected for 24-hr treatment without S9 in Table 4 as fold-increases in 2 consecutive concentrations exceeded the cutoffs for fold 4-hr nuclear p53 (1.40) and 24-hr nuclear p53 (1.45), and one concentration exceeded the cutoff for 24-hr γH2A× (2.11). The lowest observed concentration for genotoxicity of sucralose-6-acetate without S9 was 707 µg/ml (1607 µM or 1.607 mM). Thus, clastogenicity calls for sucralose-6-acetate occurred at a lower concentration with S9 metabolic activation than it did without S9 activation. Sucralose-6-acetate did not display an aneugenic signature." (ibid pp 316-317)

These conclusions are supported by documentation provided by BioReliance and analyzed by Litron Laboratories (investigation documents: AG05LV Non activation 24 hr MultiFlow Report [Document # 2025-0814-13] and AG05LV S9 activation MultiFlow Report).

An additional MultiFlow assay was performed by Litron Laboratories [Document # 2025-0814-09]. Litron Laboratories reported that clastogenic activity was not observed under either treatment condition: without S9 activation (maximum concentration used 1250 µM) or with S9 activation (maximum concentration used 1250 µM). Litron's quality control assessment of this assay was met including clastogenic and aneugenic responses to two positive controls (MMS and carbendazim) used in the assay. This information was available prior to publication of the article. However, this information was not included in the article published in the *Journal of Toxicology and Environmental Health: Part B, Critical Reviews*. NC State was invoiced for this study and according to both Drs. Schiffman and Nagle this invoice was paid.

An internal email [Document # 2025-0814-10] from Jeffrey Bemis to other Litron Laboratories scientists dated 14 JUN 23 stated the following: "Yeah, I saw that article maybe a week or two ago - I think SD was the one who forwarded it to me. She clearly had a bias going into this - I had several conversations with her - and our data didn't fit with her agenda. This work has gotten decent amount of press since it was published, so she got what she wanted. Pretty unfortunate that she took this route though."

During the interview of Dr. Schiffman several key points were identified including: (a) Dr. Schiffman was aware of the negative Multiflow assay results reported by Litron Laboratories; (b) Dr. Schiffman chose to not report the negative Multiflow assay results reported by Litron Laboratories in the publication; (c) Dr. Schiffman's decision to exclude these negative findings was based on concerns that Dr. Schiffman had regarding the quality of the assay, namely Litron Laboratories use of TK6 cells with a high passage number; and (d) this decision to exclude the Litron Laboratories data was not discussed with two other co-authors of the publication (Drs. Furey and Scholl).

Document #2025-0814-22 provides copies of Litron Laboratories protocol for the conduct of the Multiflow Assay for the study in question (NCSU-1). This protocol was accepted by Dr.

Schiffman on 5 MAY 21 and Litron Laboratories on 11 MAY 21 (protocol signed by Jeffrey Bemis, Ph.D.). The definitive study performed by Litron Laboratories used TK6 cells with a passage number of 29. Results from this study are available in Document# 2025-0814-09. The Litron Laboratories protocol does not mention an acceptable range of cell passages.

Document 2025-0814-23 provides copies of BioReliance's protocol for the conduct of the Multiflow Assay (BioReliance study identifier: AG05LV.365.BTL). This protocol was accepted by Dr. Schiffman on 10 JUL 20 and BioReliance on 10 JUL 20 (protocol signed by Shambhu Roy, Ph.D.). The Multiflow assay was performed by BioReliance on 16 JUL 20 and used TK6 cells with a passage number of 6. Results from this study are available in investigation documents: AG05LV Non activation 24 hr MultiFlow Report [Document # 2025-0814-13] and AG05LV S9 activation MultiFlow Report.

B. Respondent's Defense and Committee Rebuttal

Based on the Respondent's testimony the decision to exclude the data from Litron Laboratories Multiflow assay was made because of concerns related to the use of TK6 cells with a high cell passage number (= 29). In contrast, BioReliance's Multiflow assay used TK6 cells with a lower cell passage number (= 6) and was deemed more reliable by the Respondent. The Investigation Committee could not find any corroborating evidence that this concern was raised by the Respondent with Litron Laboratories (e.g., a request to repeat the assay using TK6 cells with a lower passage number). Moreover, the university paid the Litron Laboratories invoice associated with the conduct of their multiflow assay.

The Investigation Committee sought clarification regarding whether the use of TK6 cells in the multiflow assay with a passage number = 29 would provide a reasonable basis for the exclusion of the assay results. The Multiflow assay was developed by Litron Laboratories and their manual for the conduct of the assay (available at: https://litronlabs.com/getattachment/0634dd3a-f776-4827-8a57-7cf3a893f5c2/Instruction-Manual-MultiFlow-DNA-Damage-Kit-p5-(1).aspx) states in Appendix A "Check the health of your cells. Be sure doubling time is appropriate for your cell line and that passage number is not too high." Cutoffs for a 'too high' passage number are not provided by Litron Laboratories. The Investigation Committee also searched the scientific literature for additional guidance regarding a 'too high cell passage number' for a Multiflow assay. This search failed to identify a cut off value - however this search was not intended to be exhaustive.

The Investigation Committee is aware that cell lines at high passage numbers experience alterations in cell morphology, toxicological response to chemicals and other stimuli, growth rates, and biochemical responses compared to lower passage cells. It is well accepted that the use of cell lines at high passage numbers could adversely affect the results of some assays.

As noted earlier, Litron Laboratories incorporated positive controls to ensure that their Multiflow assay yielded expected results with positive controls. Clastogenic and aneugenic responses were observed with the two positive controls (MMS and carbendazim) used in the assay

suggesting that the passage number did not affect cell responses to these agents (Exhibit 1). This data is inconsistent with the Respondent's claim that the Multiflow assay performed by Litron Laboratories was unreliable. However, the Investigation Committee also acknowledges that responses to positive control chemicals may not reflect assay performance with the test chemical (sucralose-6-acetate) of interest.

C. Intent and Accepted Practices

The Investigation Committee's only evidence that the Respondent acted intentionally to commit Research Misconduct in the form of Falsification comes from an email sent by Dr. Bemis to other Litron Laboratories scientists. This email [Document # 2025-0814-10] states the following: "She clearly had a bias going into this - I had several conversations with her - and our data didn't fit with her agenda." The Investigation Committee could not identify any additional evidence to corroborate Dr. Bemis' contentions.

The Investigation Committee acknowledges that it is an acceptable scientific practice to exclude some assay results when certain conditions may be met including (but not limited to) technical failure, documented contamination, or out-of-range quality controls. The decision to exclude the Litron Laboratories Multiflow assay data due to any of these conditions was at best weak and rested on a 'gut feeling' of the Respondent that the number of cell passages used in the Litron Laboratories assay was 'too high'.

Accepted scientific practices rely on transparency. Thus, the Respondent should have reported the negative Multiflow data from Litron Laboratories in the article. A discussion of why passage number may partially explain the disparate results reported by BioReliance and Litron Laboratories would have been appropriate and would have followed best practices as well. In support of this discussion the article materials and methods should have included the cell passage information (this was lacking for the BioReliance assay). In addition, the exclusion of the negative Litron Laboratories data from the article should have been discussed with all coauthors of the article. In addition, the Respondent could have specified an acceptable range of cell passage numbers in the study protocol used by Litron Laboratories. Finally, best practices would have also documented in writing concerns the Respondent had about Litron Laboratory's use of TK6 cells with a high passage number and sought some form of relief prior to using NC State funds to pay the invoice for that work. A failure to adhere to these best practices was a troubling finding made by the Investigation Committee.

Ultimately, the Investigation Committee acknowledges that there is a significant difference in opinion between the Respondent and the testing laboratory (Litron Laboratories) as to whether the use of TK cells with a high passage number may have invalidated the Multiflow assay results.

The committee concluded that the investigation did not meet the required standard for research misconduct. While the committee agreed that the omission of Litron data was an "intentional decision" in that Dr. Schiffman was aware of the negative data and chose not to include it, the

committee struggled to prove it was done with the specific "intent to intentionally mislead".

V. FINDINGS & CONCLUSIONS

A. Formal Finding for Allegation

[X] Based on a preponderance of the evidence, the committee finds:

- **Determination:** No Research Misconduct

VI. Committee Members

Signature: Signed by: David Dorman E45C67A2ED7D4B0... David Dorman Chair **Date:** 04/15/2026

Signature: DocuSigned by: Sue Fenton 1FD2F68AD26E406... Sue Fenton Member **Date:** 04/15/2026

Signature: Signed by: Shobhan Gaddameedhi DF02330FD16C499... Shobhan Gaddameedhi Member **Date:** 04/15/2026

Signature: Signed by: Carolyn Mattingly 02346DA5B5C3479... Carolyn Mattingly Member **Date:** 04/15/2026

Signature: Signed by: JeffreyYoder 9449AF2A1F974D9... JeffreyYoder Member **Date:** 04/15/2026

VII. FINAL INSTITUTIONAL DETERMINATION

A. Respondent Comments

The Respondent was provided the opportunity to review the report. She provided no additional comments

B. Deciding Official's Decision

[X] Accept Findings [ ] Modify/Reject Findings (Provide explanation)

Signed by: Krista Walton 4D7358D72F36447... **Krista Walton, Deciding Official** | Date: 04/17/2026