(Billing Code: 4150-31)

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Office of the Secretary

Findings of Research Misconduct

AGENCY: Office of the Secretary, Health and Human Services (HHS).

ACTION: Notice.

SUMMARY: Findings of research misconduct have been made against Rahul Dev Jayant, Ph.D. (Respondent), Assistant Professor Pharmaceutical Sciences, School of Pharmacy, Texas Tech University Health Science Center (TTUHSC). Dr. Jayant engaged in research misconduct in research supported by U.S. Public Health Service (PHS) funds, specifically National Institute on Drug Abuse (NIDA), National Institutes of Health (NIH), grant R03 DA044877. The administrative actions, including supervision for a period of three (3) years, were implemented beginning on July 27, 2020, and are detailed below.

FOR FURTHER INFORMATION CONTACT:

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Director
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SUPPLEMENTARY INFORMATION: Notice is hereby given that the Office of Research Integrity (ORI) has taken final action in the following case:

Rahul Dev Jayant, Ph.D., Texas Tech University Health Science Center: Based on the report of an inquiry conducted by TTUHSC and additional analysis conducted by ORI in its oversight review, ORI found that Dr. Jayant, Assistant Professor Pharmaceutical Sciences, School of Pharmacy, TTUHSC, engaged in research misconduct in research supported by PHS funds,

specifically NIDA, NIH, grant R03 DA044877.

ORI found that Respondent engaged in research misconduct by intentionally plagiarizing, falsifying, and/or fabricating data included in the following grant applications submitted for PHS funds:

- R21 DA051845-01, "DAT- CNS Organoid-Chip Model to Characterize the Effects of Buprenorphine on Fetal Neurodevelopment," submitted to NIDA, NIH, on October 16, 2019
- R01 DA051894-01, "Novel 3D Printed CNS-Organoid Chip Model to Elucidate HAND," submitted to NIDA, NIH, on November 12, 2019
- R21 DA052445-01, "3D Printed Microfluidic Chip Cerebral Organoids (3D-MCCO) to Decode Neurodevelopmental Deficits with Oxycodone Exposure," submitted to NIDA, NIH, on February 10, 2020
- R21 AA028877-01, "3D Printed CNS-Organoid Chip Model to Identify Biomarkers for Prenatal Alcohol Exposure," submitted to the National Institute on Alcohol Abuse and Alcoholism (NIAAA), NIH, on February 13, 2020

ORI found that Respondent engaged in research misconduct by intentionally:

- plagiarizing four (4) images of brain organoids and one (1) graph from *Nat Protoc.* 2014 Oct; 9(10):2329-40 (hereafter referred to as "*NP* 2014") without author attribution and including the plagiarized material in Figure 3iia-c of R21 DA051845-01, Figure 2iiia-c of R01 DA051894-01, Figure 3iiia-c of R21 DA052445-01, Figure 3iiia-c of R21 AA028877-01, and the graph in Figure 2iv of R01 DA051894-01
- plagiarizing one (1) image of brain organoids from *Nature Communications* 2018 Oct 9; 9(1):4167 (hereafter referred to as "*NC* 2018") without author attribution and including the plagiarized material in Figure 2iiid of R01 DA051894-01

- falsifying and fabricating three (3) figures representing experiments measuring caspase3 expression in human brain organoids by reusing data from one experiment to represent different experimental treatments in Figure 4Bii of R21 DA051845-01, Figure 4iv of R21 DA052445-01, and Figure 3iii of R21 DA051894-01
- fabricating nine (9) bar graphs representing experiments measuring gene expression in control and experimental samples of human brain organoids treated with drugs of abuse in Figures 2i and 3i-iii of R21 DA051894-01, Figures 3ii, 4Ai-ii, and 4Bii of R21 AA028877-01, Figures 3ii and 4i-iii of R21 DA052445-01, and Figures 4A, 4Bi, and 5 of R21 DA051845-01

Specifically, ORI found that Respondent intentionally:

- plagiarized confocal images of immuno-stained samples of human brain organoids from Figure 4 of *NP* 2014, and the plagiarized images were cropped, rotated, contrast enhanced and labeled with scale bars in:
  - Figure 3iia-c in R21 DA051845-01
  - Figure 2iiia-c in R01 DA051894-01
  - Figure 3iiia-c in R21 DA052445-01
  - Figure 3iiia-c in R21 AA028877-01
- plagiarized confocal images of immuno-stained samples of human brain organoids from Figure 1e of *NC* 2018 in Figure 2iiid in R01 DA051894-01. The plagiarized image was cropped and rotated and the contrast was altered.
- plagiarized the graph in Figure 2iv in R01 DA051894-01 representing measurements of gene expression and associated statistics in cultured human brain organoids. The source of the plagiarized graph is unknown.

- plagiarized the graph in Figure 2iv in R01 DA051894-01 representing measurements of gene expression and associated statistics in cultured human brain organoids. The source of the plagiarized graph is unknown.
- falsified and fabricated control and experimental data representing measurements of caspase3 mRNA expression in human brain organoids treated with drugs of abuse. The identical images were falsely relabeled to represent different experimental treatments that were never done. The identical panels are:
  - Figure 4Bii, labeled as "Buprenorphine (5 μM)," in R21 DA051845-01
  - Figure 4iv, labeled as "Oxy 10 μM," in R21 DA052445-01
  - Figure 3iii, labeled as "Meth-10μM," in R21 DA051894-01
- falsified Figure 4Bi in R21 AA028877-01 to represent control and experimental data measuring neurite outgrowth in cultured human neurons treated with ethanol. The panels in Figure 4Bi in R21 DA051894-01, labeled as control or treated with 10ng/ml Tat for 1 or 7 days, are identical to those in Figure 4Bi in R21 AA028877-01, which were falsely relabeled as control or treated with 10 or 40 mM EtOH.
- fabricated quantitative data and associated statistics representing measurements of gene expression levels in cultured human brain organoids over time or treated with drugs of abuse. The fabricated bar graphs are:
  - Figures 2i and 3i-iii in R21 DA051894-01
  - Figures 3ii, and 4Ai-ii, and 4Bii in R21 AA028877-01
  - Figures 3ii and 4i-iii in R21 DA052445-01
  - Figures 4A, Bi, and 5 in R21 DA051845-01

Dr. Jayant entered into a Voluntary Settlement Agreement and agreed to the following:

(1) Respondent agreed to have his research supervised for a period of three (3) years beginning on July 27, 2020. Respondent agreed that prior to the submission of an application for PHS support for a research project on which Respondent's participation is proposed and prior to Respondent's participation in any capacity on PHS-supported research, Respondent shall ensure that a plan for supervision of Respondent's duties is submitted to ORI for approval. The supervision plan must be designed to ensure the scientific integrity of Respondent's research contribution. Respondent agreed that he shall not participate in any PHS-supported research until such a supervision plan is submitted to and approved by ORI. Respondent agreed to maintain responsibility for compliance with the agreed upon supervision plan.

(2) The requirements for Respondent's supervision plan are as follows:

   i. A committee of 2-3 senior faculty members at the institution who are familiar with Respondent's field of research, but not including Respondent's supervisor or collaborators, will provide oversight and guidance for three (3) years from the effective date of the Agreement. The committee will review primary data from Respondent's laboratory on a quarterly basis and submit a report to ORI at six (6) month intervals, setting forth the committee meeting dates and Respondent's compliance with appropriate research standards and confirming the integrity of Respondent's research.

   ii. The committee will conduct an advance review of any PHS grant applications (including supplements, resubmissions, etc.), manuscripts reporting PHS-funded research submitted for publication, and abstracts. The review will include a discussion with Respondent of the primary data represented in those documents and

will include a certification to ORI that the data presented in the proposed application/publication is supported by the research record.

(3) Respondent agreed that for a period of three (3) years beginning on July 27, 2020, any institution employing him shall submit, in conjunction with each application of PHS funds, or report, manuscript, or abstract involving PHS-supported research in which Respondent is involved, a certification to ORI that the data provided by Respondent are based on actual experiments or are otherwise legitimately derived and that the data, procedures, and methodology are accurately reported in the application, report, manuscript, or abstract.

(4) If no supervisory plan is provided to ORI, Respondent agreed to provide certification to ORI at the conclusion of the supervision period that he has not engaged in, applied for, or had his name included on any application, proposal, or other request for PHS funds without prior notification to ORI.

(5) Respondent agreed to exclude himself voluntarily from serving in any advisory capacity to PHS including, but not limited to, service on any PHS advisory committee, board, and/or peer review committee, or as a consultant for a period of three (3) years, beginning on July 27, 2020.

Dated: August 11, 2020

Elisabeth A. Handley,

Director, Office of Research Integrity,

Office of the Assistant Secretary for Health.

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