

## Executive Summary of Research Misconduct Investigation & University Actions

### Background:

- On April 3, 2019, allegations were received by the University from an outside source who suggested possible issues with figures in six publications. In accordance with Federal regulations and the University's Administrative Regulation 7:1, an assessment of the allegations was started in the College of Medicine (CoM) on April 4, 2019. The assessment suggested that the matter should move to an inquiry on April 8, 2019.
- The inquiry stage began on April 29, 2019, with an initial respondent of John D'Orazio, MD, PhD, a physician scientist faculty member in the CoM and the Markey Cancer Center, and a clinician with UK Healthcare. Dr. D'Orazio was one of several authors on the identified publications.
- Pursuant to the inquiry phase, a report was created by a two-person faculty committee competent in the area of inquiry, and Dr. D'Orazio provided a response to that report, and those documents were submitted to the CoM and the Vice President for Research (VPR).
- On August 17, 2019, the Federal Office of Research Integrity (Federal ORI) informed the University that it had received the same April 3, 2019 allegations from the same external source. The Federal ORI also notified the University of additional information from the National Institutes of Health (NIH). It was suggested that the University also examine figures contained in two NIH grant proposals for which Dr. D'Orazio was the principal investigator.
- Pursuant to a review of the report and response, the CoM recommended a move to an investigation. The investigation began August 29, 2019, with a new three-person faculty panel competent in the area of the investigation.
- On November 22, 2019, Stuart Jarrett, PhD., a Research Assistant Professor when he resigned from the University on September 13, 2019, was added as a respondent to the investigation. Dr. Jarrett had joined Dr. D'Orazio's lab in mid-2012, and he was a co-author on the six identified papers and a contributor of data for the grants referenced by the Federal ORI and NIH.
- Besides the applicable grant proposals, the investigation committee reviewed a representative sample (14 of 26) papers of Drs. D'Orazio and Jarrett over the six-year lookback period required by the Federal and University regulations. Of those, there were:
  - 8 papers where both respondents are co-authors,
  - 3 papers with just Dr. Jarrett, and
  - 3 papers with just Dr. D'Orazio before Jarrett joined his lab
- The investigation committee provided a draft of its report to the respondents and requested responses. The report, any responses, and the committee's recommendations were provided to University senior management on April 16, 2020.
- Thereafter, the University considered all submitted information and informed the Federal ORI and NIH of its decision, findings and planned actions, and on August 26, 2020 it issues this Executive Summary.

Findings according to the investigation and the University determinations:

- It was determined that Dr. Jarrett had committed research misconduct regarding data included in four papers and two grant proposals. In addition, it was found that an honest error had occurred on a fifth paper.
- Although he did not collect the data that was subject of the misconduct, Dr. D’Orazio had oversight of the research personnel and the questioned data was included in papers co-authored by Drs. Jarrett, D’Orazio and others, and in two grants of Dr. D’Orazio. As such, the committee and the University did not find research misconduct on the part of Dr. D’Orazio, but it was concluded Dr. D’Orazio had failed to maintain sufficient oversight over Dr. Jarrett’s work.
- As to the fifth paper, the issue concerned a duplicated image of a mouse which was not the fault of Drs. Jarrett or D’Orazio, and the committee indicated that the paper could likely be corrected with the agreement of the journal.
- The allegations and findings stem from figures and panels in articles being flipped, swapped for blank images and/or inappropriately manipulated, and a failure to maintain some original data from experiments. In one instance, the investigation committee concluded that three figures in one of the published manuscripts contained data that were intentionally fabricated and falsified to support an anticipated outcome by Dr. Jarrett, the first author of the manuscript.

As a result, the University is taking the following steps:

- We will initiate corrections or retractions of the following papers (the last in this list being the paper with the error of the duplicated image of a mouse):
  - Jarrett SG, Wolf Horrell EM, Christian PA, Vanover JC, Boulanger MC, Zou Y, D’Orazio JA. PKA-mediated phosphorylation of ATR promotes recruitment of XPA to UV-induced DNA damage. *Molecular Cell*. 2014. Published: June 19, 2014.
  - Jarrett SG, Carter, KM Bautista RM, He D, Wang C, and D’Orazio JA. Sirtuin 1-mediated deacetylation of XPA DNA repair protein enhances its interaction with ATR protein and promotes cAMP-induced DNA repair of UV damage. *J Biol Chem*, 2018.
  - Jarrett SG, Carter, KM, Shelton, BJ and D’Orazio JA. The melanocortin signaling cAMP axis accelerates repair and reduces mutagenesis of platinum-induced DNA damage. *Scientific Reports*, 2017.
  - Jarrett SG, Wolf Horrell EM, D’Orazio JA. AKAP12 mediates PKA-induced phosphorylation of ATR to enhance nucleotide excision repair. *Nucleic Acids Research*, 2016.
  - Bautista RM, Carter KM, Jarrett SG, Napier D, Wakamatsu K, Ito S, D’Orazio JA. Cutaneous pharmacologic cAMP induction induces melanization of the skin and improves recovery from ultraviolet injury in melanocortin 1 receptor-intact or heterozygous skin. *Pigment Cell and Melanoma*, 2019.
- All co-authors of the publications will be notified of the corrections and retractions and the issues identified in the committee’s report. Documentation of correspondence with each applicable journal, co-authors, co-investigators, and collaborators will be provided to the VPR by September 18, 2020.
- Dr. D’Orazio, his lab members, and personnel under his direct supervision as principal investigator (faculty, staff, students, post-doctorates) are required to complete all Collaborative

Institutional Training Initiative (CITI) Responsible Conduct of Research (RCR) modules by September 18, 2020 and are required to take yearly refresher training for each module. Also, his research personnel must complete in-person (or Zoom) training provided by Richard Grondin, Ph.D., director of Good Research Practices Resource Center, by December 1, 2020.

- Dr. D’Orazio, his lab members, and personnel under his direct supervision as principal investigator are required to utilize LabArchives to record all research activity and store all research data going forward.
- A panel appointed in consultation with the VPR and reporting to the Dean of the CoM, will monitor compliance with the required actions and will review research data in manuscripts and grants from Dr. D’Orazio’s program before submission.
- Dr. D’Orazio will step down from his research leadership role in the Markey Cancer Center and his endowed chair in pediatric research. However, he will continue to serve as chief of Pediatric Hematology and Oncology.
- Dr. D’Orazio may continue his research in pediatric cancer and the actions taken in no way impact his role in the clinic, nor his ability to provide outstanding care to patients.