



(Billing Code: 4150-31)

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Office of the Secretary

Findings of Misconduct in Science

AGENCY: Office of the Secretary, HHS.

ACTION: Notice.

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

Kaushik Deb, Ph.D., University of Missouri-Columbia: Based upon the evidence and findings of an investigation report by the University of Missouri-Columbia (UM) transmitted to the United States Department of Health and Human Services (HHS), Office of Research Integrity (ORI) and additional analysis conducted by ORI in its oversight review, ORI found that Dr. Kaushik Deb, former Postdoctoral Fellow, Life Sciences Center, UM, engaged in misconduct in science in research that was supported by National Institute of Child Health and Human Development (NICHD), National Institutes of Health (NIH), grants 2 R01 HD021896 and 5 R01 HD042201-05 and National Center for Research Resources (NCRR), NIH, grant 5 R01 RR013438-07.

ORI found that the Respondent intentionally, knowingly, and recklessly fabricated and falsified data reported in the following published paper:

- Deb, K., Sivarguru, M., Yong, H., & Roberts, R.M. "Cdx2 gene expression and

trophectoderm lineage specification in mouse embryos.” *Science* 311:992-996, 2006 (hereafter referred to as “*Science 311*”); this paper was retracted on July 27, 2007

An earlier version of *Science 311* had been previously submitted to *Nature* on or about June 24, 2005 (hereafter referred to as “*Nature #1*”). It was revised and resubmitted to *Nature* on or about August 24, 2005, and ultimately was rejected by *Nature* on September 14, 2005 (hereafter referred to as “*Nature #2*”).

Specifically, ORI finds by a preponderance of the evidence that the Respondent engaged in misconduct in science by intentionally, knowingly, and recklessly:

1. falsifying and/or fabricating three panels of data in Figure 1 (Figures 1C, 1D, and 1E) in *Science 311* and in *Nature #1* and *Nature #2*, by photo-manipulating confocal fluorescent images to falsely represent three-, four-, and six-cell embryos, thereby supporting the paper’s central premise that cells derived from a late-dividing blastomere would be positive for a transcription factor, *Cdx2*, while the cells derived from a leading blastomere would be *Cdx2* negative
2. using photo-manipulation to falsify and fabricate at least 13 panels of confocal image data in Figures 2, 3, and S2, including Figures 2K, 2L, 2Q, 2R, 2V, 2X, 3G, 3H, 3I, S2s, S2t, S2u, and 2W, in *Science 311* and in corresponding figures in *Nature #1* and *Nature #2* so that these images falsely supported the central premise in *Science 311* that

Cdx2-expressing cells were peripherally located in the embryo

3. falsifying Figures 2G, 3J, 3L, S2V, S2X, S6I, S6J, and S6K in *Science* 311, Figures 2A, 2C, S4v, and S4x in *Nature* #1, and Figures 2G, 3I, 3J, and 3K in *Nature* #2 by reusing and re-labelling the same image to represent different embryos and different experimental conditions

4. falsifying Figure 4 in *Science* 311 and corresponding figures submitted in *Nature* #1 and *Nature* #2 to falsely illustrate that the first dividing cell of a two-cell mouse embryo will ultimately differentiate into the trophoblast; specifically, Respondent:
 - falsely colored and photomanipulated a single bright-phase image of a three-cell embryo to make it appear as four separate embryos that had been differentially injected with TRD

 - falsely colored and photomanipulated a four-cell embryo to make TRD appear distinctly located in the lagging cell and in its descendent cell, when the actual embryo contained diffuse staining within the sub-zonal, extracellular space

 - photomanipulated a damaged, non-viable two-cell embryo to make it appear viable

 - re-used, falsely colored, and relabeled seven images from an unrelated experiment

to falsely represent a time lapse course of eight different images

5. falsifying Figures 5K, 5L, 5N, and 5O in *Science* 311 by photo-manipulating a single confocal image to falsely represent four different images at two different stages of embryonic development. The images also were presented as Figures 4k, 4l, 4n, and 4o in *Nature* #1.

The Respondent failed to take responsibility for the fabrication and falsification described in ORI's findings.

The following administrative actions have been implemented for a period of three (3) years, beginning on November 17, 2014:

- (1) Respondent is debarred from any contracting or subcontracting with any agency of the United States Government and from eligibility for, or involvement in, nonprocurement programs of the United States Government referred to as "covered transactions" pursuant to HHS' Implementation (2 C.F.R. Part 376 *et seq*) of Office of Management and Budget (OMB) Guidelines to Agencies on Governmentwide Debarment and Suspension, 2 C.F.R. Part 180 (collectively the "Debarment Regulations"); and
- (2) Respondent is prohibited 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 FURTHER INFORMATION CONTACT:

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